RIIO|GD1

Response to Initial Proposals

Cost Efficiency

National Grid
Gas Distribution

September 2012

Redactions in documents

We welcome full and public debate on any aspect of our consultation response from all stakeholders. However, the conclusions we have reached and documented in our response are informed to a significant degree by data that has been shared by Ofgem on the companies' respective business plans. This data is not fully in the public domain and the other companies have not consented to publication of this at this stage. Ofgem are working to ensure that this data is released such that our full consultation response can be shared and we will publish in full when we have that direction from Ofgem.

Contents

Cost Efficiency

The following responses address the questions raised within Ofgem's RIIO-GD1 Initial Proposals 'Supporting document - Cost Efficiency'.

Overview

1. The Cost Efficiency section covers our detailed response on three main areas:

   - The Cost Efficiency Assessment
   - The resultant IQI Assessment
   - Workload / output disallowances

2. The detailed question responses set out our full views but we provide a summary of our key themes on these three areas below.

Cost Efficiency Assessment

3. We do not support Ofgem's cost assessment for NGGD's networks.

4. Standing back from the detail, there are high level features of the Initial Proposals which need further explanation and which suggest the assessment is not reasonable:

   - **Creation of the industry benchmark:** The industry plans as a whole are deemed to be significantly inefficient (an average of 13%) despite a significant track record of cost efficiency and significant further efficiencies committed to within the RIIO-GD1 plans.
   - **Top Down vs. Bottom Up Benchmarking results:** The material disparity between the results of our networks' efficiency ranking between top down and bottom up approaches to benchmarking. For example our West Midlands network is deemed the most efficient on a totex approach but some 14% inefficient on a bottom up approach.
   - **Allowances relative to scale:** NGGD is required to deliver a similar set of outputs to the other GDNs with significantly less (c. 20%) levels of funding (whatever normalisation approach is chosen).
   - **London Assessment:** Our London network is judged inefficient on almost all assessments even when our other networks lead the pack and this is in spite of the fact that all of our networks are managed under a common operating model.

5. We stand firmly by our RIIO-GD1 plan evidence of accurate asset management decisions and cost efficiency challenges that place our networks at the efficiency frontier on total costs.

6. Our confidence is in part due to the strong process we followed in developing a well justified business plan in accordance with the principles contained in the RIIO Handbook. We put a significant amount of research into stakeholder engagement, including willingness to pay research to help derive our planned outputs. For the more technical aspects of our plan we also carried out research into matters such as our benchmarking position, real prices effects and ongoing efficiency.

7. Furthermore, our engagement with GEMA and Ofgem indicated that our Business Plan, with its clearly justified workload assumptions and proposals to close the current efficiency gap, was on the right track and only for relatively few areas (such as London network specific factors and finer details of the replacement programme) were we expecting further dialogue.

8. Therefore we were surprised by the significant gap between Ofgem's cost assessment and our plans.

9. We elaborate on the four areas that at a high level question the robustness of the methodology applied.

Creation of the industry benchmark

10. At the highest level we believe the creation of an unrealistic industry benchmark of a notionally efficient network stems from three main parts of the Initial Proposals methodology:

- An over reliance on bottom-up benchmarking and the use of historic costs. In contrast, total cost efficiency and the assessment of forward looking plans are key RIIO principles, and not relying largely or wholly on Totex benchmarking would represent a backward step from GDPCR1.

- A number of examples of cherrypicked or unjustified technical assessment benchmarks in the bottom up assessment, inconsistent treatment of costs in bottom-up and top down benchmarks and calculation and interpretation errors.

- An unrealistic expectation of short term external cost pressures and how they can be managed through continuous improvement efficiencies given the significant efficiencies already contained within the plans (which go beyond savings assumed at network sales) and the maturity of the industry.

Top Down vs. Bottom Up Benchmarking results

11. As well as determining an unrealistic industry benchmark position, the methodology applied in Initial Proposals has a disproportionately detrimental effect on NGGD's networks.

12. NGGD's networks see a major change between the technical assessment on the bottom-up benchmarking and the top down (for example our West Midlands Network moves from being on the frontier on total cost to 14% off the pace on bottom up). Other network operators do not have this difference as shown in the extract form the Initial Proposals below.

Table 1.2: GDN totex forecasts and Ofgem's proposed allowances

GDN	(A) % adjustment for efficiency under historical totex model	(B) % adjustment for efficiency under historical bottom-up model	(C) % adjustment for efficiency under forecast totex model	(D) % adjustment for efficiency under forecast bottom-up model	(E) Average of the 4 approaches - % adjustment for efficiency (pre-IQI)	(F) Total % reduction in the GDNs' forecasts for outputs and efficiency (post-IQI)
EoE	13%	15%	8%	12%	12.3%	13.8%
Lon	19%	19%	15%	19%	17.9%	25.5%
NW	9%	16%	4%	15%	10.9%	20.0%
WM	5%	14%	0%	14%	8.0%	15.7%
NGN	9%	7%	4%	5%	6.3%	12.8%
Sc	12%	11%	8%	9%	9.8%	16.5%
So	13%	12%	8%	8%	10.2%	11.0%
WWU	17%	18%	13%	15%	16.0%	24.9%

[1] inclusive of RPEs
[2] All Smart Metering costs are excluded from the submission costs and proposed allowances

Allowances relative to scale

13. NGGD's networks on average have been given 20% less allowance than other network operators with similar sized networks, excluding the workload/output driven capex/repex activities. This cannot be reasonable.

14. The figure below shows the relative opex and non load capex allowances for each Network, relative to scale. We have removed repex and load related capex because these are very largely workload related and have differential outputs associated with them. The measurement of scale is provided by MEAV, customer numbers and Ofgem's totex CSV (as adjusted to remove repex and load related capex drivers).

The figure shows the extent to which our Networks have a lower allowance than those of the other Networks, and especially relative to . This is a particularly surprising outcome, given that, if anything, due to its higher pay levels and productivity issues, London would be expected to have the highest level of allowances.

London Assessment

15. Our plan contained considerable evidence supporting the additional cost of working in London. Ofgem have acknowledged that working in London reduces productivity. Ofgem allowances reference SGN's study which showed a 15-20% impact and use 15% as the basis for NGGD London allowances. Despite this adjustment, our London network continues to be assessed as an outlier on all methods of assessment. NGGD runs a common operating model with unified processes and support functions, and yet our repair activity assessment shows NGGD's networks ranked 1, 2, 3 and 8, this raises questions over the robustness of the methodology applied.

16. We would like Ofgem to consider the evidence in our plan and our consultation response that our London network should have a productivity loss adjustment of 20% for repex, and similar adjustments for emergency and repair activities.

Improving the methodology

17. The discrepancies in NGGD network allowances are a function of the methodological flaws outlined above. Our analysis below highlights how we have grouped the main areas where the methodology could be improved such that a more robust assessment could be made which both sets a reasonable industry benchmark but also properly reflects networks' relative total cost efficiency against these benchmarks.

18. The key categories are as follows:

- **Principles and Approach:** not enough weight is applied to top down total cost assessment in the benchmarking methodology and the limited use of forward

looking plans. The totex approach is theoretically correct as it leads to the lowest cost to customers, is consistent with the RIIO principles and Handbook, and also consistent with Ofgem's approach at GDPCR1.

We manage our networks on a least total cost basis, spending opex rather than capex where efficient. In contrast, Ofgem has previously found that the other companies have a bias to capex solutions. Consequently, the bottom-up approach penalises NGGD, as it does not apply a systematic approach to capex efficiency, despite the fact we have the lowest cost networks on a total cost basis both historically and into the future.

- **Inconsistencies and logic errors:** treatments within bottom-up benchmarks and top down benchmarks lead to unintentional disallowances. The largest examples are for:
  - incomplete analysis of loss of meterwork impacts (i.e. NGN's additional repex costs);
  - Medium Pressure and MOBs repex treatment in totex regressions - where the costs are effectively benchmarked out, having been judged efficient in the bottom-up analysis; and
  - Excessively tight roll forward of allowances for real price effects and ongoing productivity.
- **Acknowledged Errors:** Ofgem have already signalled the intent to correct for arithmetic errors in the allowances, but the ultimate size of the adjustments is as yet unclear.
- **Unjustified technical Assessments including regional factors:** unreasonable benchmarks being set from:
  - the lack of technical assessments for areas where they needed to be carried out, i.e. non-routine maintenance and environmental spend;
  - technical assessments which are not robust (Business Support and IS capex); and
  - insufficient account of network specific factor evidence (London productivity).
- **Further Evidence required and provided:** NGGD has submitted additional evidence on London productivity impacts from streetworks legislation, the increases in S74 charges and FPNs, plus further evidence on non-rechargeable diversions as requested in the Initial Proposals.

19. Figure 2 summarises the individual elements we believe need to be addressed, and also shows where our detailed arguments can be found in our consultation response.

Figure 2 - Proposed improvement areas for the cost assessment methodology

£m p.a.	Correction Value	Main Response References
1. Principles & Approach		
100% totex	50	Ch1, Q1
8 year plan	40	Ch1, Q1
Sub Total	***90***	
2. Inconsistencies & Poor Logic		
MP factor not in totex	13	Ch8, Q3
MOB factor not in totex	8	Ch8, Q3
Loss of meterwork	13	Ch4, Q3 and Ch6 Q1 Emergency
Labour RPE	12	Ch2, Q2
Ongoing Efficiency	15	Ch2, Q2
Other Capex	5	Ch7, Q1
Missing services in repex csv	4	Ch8, Q3
Totex/MEAV erros	2	Ch3, Q1
Upsized MP replacement	2	Ch8, Q2
Repair Deterioration (incl. Emerg)	5	Ch6 Q1 Repair & Ch8, Q1
Sub Total	***79***	
3. Acknowledged Errors	***8***	
4. Poor Technical Assessments inc Regional Factors		
Maintenance (NRMP)	10	Ch6, Q1 Maintenance
IS Capex	12	Ch7, Q1
Land Remediation	4	Ch6, Q1 Land Remediation
Training & Apprentices	8	Ch6, Q1 Training & Apprentices
Business Support	15	Ch6, Q1 Business Support
Holders	1	Ch6, Q1 Holder Demolition
MP removal of avge not project specific	7	Ch8, Q3
London Productivity Factor - Opex	4	Ch6, Q1 Emergency, Repair, Maintenance and Ch2, Q1
London Productivity Factor - Repex	5	Ch8, Q2 and Ch2, Q1
Streetworks formulae error	4	Ch8 Q2
Permali meters	2	Ch8, Q3 and Ch2 Q1
Sub Total	***72***	
5. Further Evidence Required and Provided		
LTS Non Rechargeable diversions	3	Ch7, Q1
S74/FPN	12	Ch4, Q1
London Productivity streetworks	3	Ch4, Q1
Sub Total	***18***	
TOTAL	**266**	

20. Our analysis supports amendments of £266m. Due to the interaction of the different approaches to cost assessment, correcting all these points would lead to a lower adjustment to our overall cost allowance.

21. However, at present we cannot accurately quantify what the adjustment would be, as the Initial Proposal approach is too complex for us to model in the time available.

22. Our analysis fully explains the difference between the Initial Proposals assessment and our April Business Plan. We believe this illustrates the well justified nature of our plan and the total cost value for money that is offered for customers in both the short and long term in delivering the outputs they required.

IQI Assessment & Allowances

23. For the reasons set out above, we believe the material weaknesses in the Initial proposals cost assessment methodology has produced an unjustified IQI assessment for our networks. In addition the methodology appears to have skewed our allowances compared to other companies, in particular as compared to NGN.

24. We anticipate an improved methodology would show a much improved cost assessment for our networks, close to the efficiency frontier with a commensurate increase in the IQI incentive rate and upfront allowances.

25. We request in our response explanations of Ofgem's rationale for not increasing the IQI incentive range further to 60-70% rather than 60-65%, and also how Ofgem considered our evidence suggesting why a lower incentive rate range should apply to our London network, as both were absent from the IP.

26. We demonstrate that we have been materially affected detrimentally from Ofgem's policy change to base IQI assessments on the second plans instead of the first plans. The Initial Proposals implies that Ofgem's assessment of absolute efficiency is unaffected by company plans. Given that the Initial Proposals benchmarking applies a 50% weighting to Network forecasts for 2013/14, it is difficult to see how this can be valid. We estimate a detrimental impact of around £30m p.a. to allowances from this change of strategy.

Workload/Output disallowances

27. There are a number of areas where we do not support the workload disallowances (and hence disallowed outputs) that are contained in Initial Proposals.

Condition mains replacement

28. The Initial Proposals disallow all 1,352km of poor condition small steel mains and other mains outside of the HSE framework we proposed to be replaced. Removal of this risk is a requirement on our duty of care under statutory legislation, an essential part of our asset management strategy, and a key part of delivering stakeholders' key priorities of a safe and reliable network. Our plan maintains workload at historic levels given it is not impacted by the change in the HSE Three Tier policy. Ofgem's Initial Proposals disallowed all of this expenditure on the basis that it had not been cost benefit justified. NGGD would like to work with Ofgem to ensure we have sufficient funding for replacement to maintain/reduce risk and to meet our statutory safety and reliability requirements.

Non Routine Maintenance Programme

29. The Initial Proposals have disallowed a significant proportion of proposed expenditure to deploy new techniques that emerged from IFI projects in our current control to better maintain, understand and monitor the health of our critical LTS assets. By spending operating cost on enhanced maintenance programmes, NGGD would avoid more expensive capital costs of replacement. Ofgem have removed significant parts of this Non Routine Maintenance expenditure through benchmarking efficient levels of maintenance operating costs, without recognising

this was a step change from ongoing levels to deliver asset integrity outputs. We would like to Ofgem to appraise this evidence and ensure that we are funded to deliver these outputs.

HSE framework Tiers 2 and 3 iron mains approach

30. Ofgem's approach has disallowed 93% of our proposed programme, cutting our risk removed and leakage commitments by 20%. We are concerned this leads to different results for customers across networks (e.g. NGN) where Tiers 2 and 3 cost benefit plans have been allowed in full. Given the similar nature of the networks, we would like work with Ofgem to ensure that the common methodology produces consistent results for all customers.

31. We are also concerned about the piecemeal assessment applied to our London medium pressure strategy which appears to have left an inconsistent allowance of workload and costs and has a significant impact on the programme's scope and deliverability considerations.

Other Workload

32. There are a number of other areas where we are concerned with the application of the Initial proposals methodology on workload and associated costs. These are:

- lack of funding for our statutory obligations on other services;
- skewed reductions to our Relay After Escapes volumes;
- insufficient allowance for tier 1 workloads due to the disallowance of Taper and all condition volumes; and
- outputs adjustments applied pro-rata, rather than using project specific unit costs.

33. These areas are covered in detail in our answers to Chapter 4 Questions 3 and Chapter 8 Questions 1, 2 & 3.

34. Overall the IP workload disallowances would lead to a reduction of 27% to the mains risk removal and leakage reduction outputs from our April plan. This is equivalent to not doing any replacement in one of our networks for the whole of the RIIO-GD1 period. Hence, it is a significant reduction in outputs that customers would receive.

Detailed Responses and Next Steps

35. The detailed question answers below outline the rationale for our assessment of the Initial Proposals.

36. Given the scale of changes required and the short timescale to the Final Proposals, we look forward to working closely with Ofgem over the coming weeks to the Final Proposals on all of these areas to ensure we have a RIIO-GD1 package that offers a fair and transparent deal for customers across all networks that appropriately balances value for money for our customers and fair returns for our investors.

Chapter 1 - Overview of cost assessment methodology

Question 1: Do you consider our overall approach to cost assessment appropriate, and if not what changes would you propose?

Summary of our position

1.1 We welcome a number of factors in the IP, in particular, the progress made in developing regression drivers, the application of statistical tests, the use of panel data, the use of forecast data (albeit more limited than we propose), the London pay uplift, and the application of a sparsity factor to Emergency.

1.2 However, there are a large number of factors in the IP's cost assessment approach which we disagree with. The workload related elements of these are addressed separately in our response. In respect of the cost efficiency elements:

- The result it provides is not reasonable, as supported by S&P.
- We believe that allowances should be set using 100% Totex approaches, rather than 50% cherry-picking bottom-up approaches.
- It is not consistent with the principles of RIIO, in particular in that:
  - It is not a Totex approach.
  - The 8 year plan data is not benchmarked, only 2010/11 and 2013/14
  - The additional outputs our stakeholders asked us to provide, such as CO monitoring, have either received no or very limited cost assessment
- Although we prefer the allowances to be set using Totex models alone, if other models are to be used the middle-up models are more robust than the bottom-up.
- The modelling is opaque, highly complex and, as acknowledged by Ofgem, contains a considerable number of errors.
- In particular for non-standard items such as MOBs work or our MP repex programme, it is internally inconsistent, allowing costs in full under two of the approaches, but wholly or largely disallowing them in another two.
- Further account needs to be taken of Maintenance NRMP.
- The modelling is unstable in that it uses one year's data to determine Upper Quartiles.
- The technical assessments were not robust being inconsistent between cost types, inconsistent with Ofgem policy on Network Sales, and in key areas, disregard the advice of Ofgem's own consultants.

- Further account needs to be taken of Network Specific Factors for London. These further factors would explain the apparent anomaly of our Networks ranking 1, 2, 4, and 8, when we run them using the same systems and processes.

- Re-opening the present price control to claw-back apprentice and training costs weakens the regulatory regime, contradicts Ofgem's RIIO commitments, and has been applied asymmetrically.

1.3 **As demonstrated above, there are a number of material elements of the proposed methodology we do not support. Consequently, we do not believe that the Initial Proposals' approach to Cost Assessment is appropriate.**

Justification of Our Position

1.4 Before commenting on the Initial Proposals overall approach to cost assessment, it is helpful to summarise it first.

1.5 It calculates a cost allowance based on the average of four different approaches. Two of these approaches are Totex regression approaches, and two are bottom up approaches, the latter being a mixture of activity regressions and technical assessment of cost areas such as IS. All the regressions are based on a number of years of panel data but use two years' specific data, 2010/11 and 2013/14, to give average cost line equations.

1.6 For each year of the RIIO period, driver information is fed into these equations to give average cost allowances, to which an Upper Quartile adjustment is made, based on the relative efficiency of each Network across all the activity regressions for a single year, either 2010/11 or 2013/14.

1.7 There are a number of aspects with which we agree:

- We acknowledge the progress that has been made in developing regression drivers, the application of statistical tests, the use of panel data and the application of benchmarking to forecast data.
- We also broadly agree with the level of London pay uplift, and the application of a sparsity adjustment to the Emergency activity, which we proposed.

1.8 Note that NGGD, alone of the companies, proposed Network Specific Factors such as sparsity which act to reduce costs in our Networks, as well as those which add to them.

1.9 However, this response highlights a significant number of aspects of the IP approach with which we disagree, and which we regard as deficiencies.

1.10 We believe that these deficiencies exist because the process for RIIO-GD1 is less robust than at GDPCR1. At GDPCR1, Ofgem's thinking on key issues, such as contained in consultants' reports on costs, were shared with companies on an ongoing basis during the process. In addition, between the Initial Proposals and the Final Proposals there was an Update Paper to allow further consultation on potential improvements to the Initial Proposals position.

1.11 In contrast at RIIO-GD1, technical consultants' reports and Ofgem's statistical advice have not been shared. In addition the overall approach to benchmarking was only apparent at Initial Proposals, having been scheduled to be complete in a year earlier in July 2011 - before the first Business Plans were due. Yet the benchmarking is far more complex, the result of which is a large number of errors in the Initial Proposals. Furthermore, no Update Paper is planned to allow consultation on the improvements to the Initial Proposals approach which need to be made.

1.12 Turning to the detail of the IP's cost assessment approach, we have addressed these in the following sections:

- The end result
- Totex vs. bottom-up benchmarking
- Consistency with RIIO principles
- Middle Up models
- Model complexity and opacity
- Internal inconsistency
- Maintenance NRMP
- Model instability
- Technical assessment
- Network Specific Factors
- Clawback of Apprentices & Training

1.13 We expand on these points below.

The end result

1.14 The acid test of any process is 'does the answer appear reasonable?' The answer provided by the IP process is demonstrably unreasonable.

1.15 To show this, we took the Totex allowance figures, pre IQI from the IP. We deducted repex, as this represents workload which has to be carried out and has clear output targets against it. We also adjusted for other genuine workload related differences by deducting connections, mains reinforcement, SIU costs and the costs associated with MOBs surveys.

1.16 The resulting costs we compared against 3 scale variables, being customer numbers, Modern Equivalent Asset Values and the totex regression CSV, the latter being adjusted to remove the repex, connections and mains reinforcement workload drivers. The results are shown for each Network in the chart below.

1.17 The scale-adjusted allowances resulting from the IQI process are significantly lower for NGGD than for each of the other companies and far lower than those for

1.18 This is despite the fact that we have the most expensive area to operate in, London Network - so if anything, you would expect NGGD to have higher scale adjusted allowances than the other companies.

1.19 This message is reinforced by the views of S&P. In their Credit FAQ document of 25th July the Rating Agency stated that "*Standard & Poor's Rating Services' analysis of these initial draft proposals find features that may increase credit risk for rated issuers in this sector. What's more, a significant cutback in total expenditure, and what appear to be tough efficiency targets for some network operators, raises questions about the affected utilities' to manage within the proposed cost allowances and meet their required outputs*."

1.20 Therefore, the result of the IP benchmarking is unreasonable. We consider individual areas of the benchmarking below.

Totex vs. bottom-up benchmarking

1.21 We have consistently supported the principle of Totex benchmarking, as this should enable customers to benefit from the provision of outputs to customers at the lowest cost.

1.22 Therefore we do not support the Initial Proposals approach to setting allowances which, by giving a 50% weight to bottom-up approaches, only places a 50% weight on Totex approaches.

1.23 Bottom-up approaches are useful in identifying cost drivers, workload trends and network specific factors, but they are inherently subject to cherrypicking problems, which in this case have led to the creation of a 'Superman' Network, with artificially low levels of allowances.

1.24 The Superman effect is evidenced by the fact that the IP levels of NGGD's cost allowances are on average more than 7% less under the bottom-up approaches than the Totex, and for the industry as a whole 5% less. The impact of cherry-picking therefore impacts the whole industry, but with a disproportionate impact on NGGD.

1.25 Despite the advent of RIIO, the IP's approach to benchmarking actually contains less of a Totex approach than that adopted at GDPCR1 - consequently RIIO-GD1 is a retrograde step.

1.26 At the last price control review, Ofgem used its 'middle-up' total opex and repex models to assess the efficient level of those costs, carried out a separate assessment of capex levels, and then, recognising the trade-offs and that NGGD was especially low in capex, performed a totex regression the result of which was an additional £7m (2009/10 prices) of cost allowance for NGGD. The Final Proposals, December 2007, paragraph 3.78 provides the details.

1.27 This is an important issue as NGGD's has kept a low capex approach, and this is evident in our RIIO plans as compared to those of the other companies.

Consistency with RIIO principles

1.28 Neither is the IP approach consistent with the principles of RIIO on three grounds.

1.29 First, the RIIO handbook specifically states that Totex assessment is the principle method of assessment. Paragraph 8.37 states that:

"*When undertaking benchmarking analysis we will consider the following principles:*

- *total costs should be the basis of assessment given the ambition to avoid biasing the network company into particular solutions (e.g. capex solutions over opex);*
- *we do not expect to use total cost benchmarking in a mechanistic analysis of the base revenue requirement given potential concerns about the robustness of the analysis; and*
- *no single measure of total cost is ideal, particularly given the lumpy nature of capital expenditure and variation in the historic capital investment programmes (and hence RAVs) of network companies in a sector, and it may be appropriate to use a number of alternative measures as cross-checks on the analysis*."

1.30 The document continues in paragraph 8.42 that Ofgem may use additional evidence, such as Business Support analysis, to support their assessment, for bottom-up approaches.

1.31 We agree with Ofgem that no single measure of totex is ideal, there are potential alternative CSVs such as those provided by the Middle Up models, with an additional GDPCR1 style adjustment to reflect the investment / opex trade-off.

1.32 The RIIO principle of Totex assessment, albeit supported by bottom-up approaches, does not support a 50% weight being attached to bottom-up approaches in deriving cost allowances.

1.33 Second, the time period in respect of which the Total cost benchmarking was to be carried out, was mainly in respect of the period of the plan, supported by historic benchmarking. Paragraph 8.22 of the RIIO Handbook states that: *"As part of our assessment of the quality of a network company's plan we will benchmark the forecast costs to others in the sector where feasible. We will also compare the costs in the plan to historic cost performance although we recognise that, given the changes that network companies are undergoing, these comparisons may need to be treated with caution."*

1.34 Our Plans set out to close NGGD's apparent efficiency gap in 2010/11 in the RIIO plan, and Ofgem data suggests that, if due account is taken of London's Network Specific Factors, we have succeeded.

1.35 Consequently, we are disappointed that Ofgem has decided not to use the 8 year model data due to poorer diagnostics. We understand that this is driven by statistical concerns. However, we believe that the statistical problems have only arisen due to the different positions adopted by companies, such as for:

- NGGD's overheads attributed to loss of meterwork;
- NGGD's and WWU's Maintenance NRMP increases; and
- SGN's workload assumptions.

1.36 One of the advantages of using benchmarking the 8 year plans was that it would have highlighted the different positions adopted by companies e.g. due to NRMP assumptions, which could then have been investigated by Ofgem and understood after the November Plan, and adjusted for in the benchmarking.

1.37 Our Business Plan set out clear linkages between investment, opex and outputs, and which demonstrated closure of the efficiency gap. The effect of the IP using 2010/11 and 2013/14 for benchmarking largely disregards the vast majority of our Business Plan, and has led to a well justified Business Plan receiving a 15% (pre-IQI) disallowance for cost efficiency.

1.38 Third, the delivery of outputs desired by stakeholders was a key element of the RIIO programme. These outputs would be expected to vary by company, given the wishes of different groups of stakeholders. Paragraph 8.23 of the RIIO Handbook stated that *"The benchmarking of plans will be based on the total costs of delivering the baseline performance level for primary outputs set in Stage 1 of the review."*

1.39 This implies that there would be some consideration of the extent to which costs would be expected to vary, depending on the level of additional outputs. In the

case of NGGD, we included specific costs in our plan to provide a CO monitoring service in excess of that of other Networks, for which no separate benchmarking or allowance has been given.

Middle-up models

1.40 In respect of the middle-up models, Ofgem dismisses these as their specification is similar to the Totex models and derive broadly the same comparative efficiency scores.

1.41 We believe that the middle-up approach is of some value, as it is less subject to the cherry-picking problems associated with analysis at the lower, activity level, although, similar to Ofgem's practice in 2007, it still falls short of the full totex approach.

1.42 We acknowledge that the middle-up models are a subset of the totex models, not taking account of trade-offs between opex, capex and repex, and so are likely to provide a less robust answer than Totex modelling. That said, although we would prefer that Ofgem apply only a Totex approach to benchmarking, as this deals fully with cherry-picking issues, the middle-up approach is far better than bottom-up.

Model complexity and opacity

1.43 In respect of the modelling supplied to around a week after the publication of IP, it is highly complex and opaque. There are 94 files of 63MB (some of which are linked to other files which have not been provided), which required the publication of a step-by-step guide in addition to the Cost Assessment supporting document, plus subsequent supporting guidance in Business Support.

1.44 Indeed, it is so unwieldy that Ofgem supplied an error log containing 25 known errors with the files, subsequently adding another 9, to which the companies have added 52 further errors to date, more being found even now, some weeks later.

1.45 The complexity is a consequence of the number of approaches being used, in particular the bottom-up approach which is especially data intensive. If the totex approach alone is used, the models will become far simpler and more transparent.

1.46 However, if Ofgem continues with its present approach, we are concerned that it will need to set up a process for dealing with the errors that are likely to be contained within the modelling for Final Proposals.

Internal inconsistency

1.47 One of the other consequences of complexity is internal inconsistency, where costs have been wholly or largely allowed under certain approaches, but disallowed under others. This leaves it very unclear precisely what costs have been allowed in association with what work and outputs.

1.48 Allowing costs under one approach but not another particularly impacts any Network which has a higher than average level of work for which Ofgem have no regression driver, or which has a regression driver, but for which local factors lead to the work having relatively high unit costs. Both circumstances apply to London Network, and partly explain why IP shows it having the highest disallowance of any Network.

1.49 Two examples for London Network concern MOBs work and the Medium Pressure mains replacement work, the latter having relatively high unit costs due to its location in central London. Both of these have been reviewed and then wholly allowed in the bottom-up analysis for non-tier 1 repex, however, because there is no separate allowance made in the totex regressions, both have been largely or wholly benchmarked out.

1.50 Our proposal is that these costs should be subject to a normalisation adjustment, so that a separate allowance is made, post totex regression, for the additional workload and costs associated with both these types of work – which is the approach Ofgem has adopted for some other atypical costs identified by bottom-up analysis, such as for MOBs surveys.

Maintenance NRMP

1.51 NRMP maintenance costs make up around £20m p.a. for NGGD over the RIIO period, an average increase of £10.3m since 2010/11.

1.52 In particular the increase in our costs needs to be subject to separate consideration, as Ofgem has proposed for WWU. Many of these costs constitute an alternative to Asset Integrity capex, which has been removed as a workload adjustment, and so does not affect IQI.

1.53 The methodology ignores the workload driven ‘new’ Asset Heath non routine maintenance programme. NGGD provided the justification for these increases in its November Business plan. One particular item is that of the new technology now available through IFI development that enables for the first time the ability to inspect previously un-piggable pipelines. This is effectively standing the investment that Ofgem approved. More importantly, with this technology now available the safety regulations make it necessary to utilise and then remediate any issues found.

Model instability

1.54 In respect of the stability of the modelling, Ofgem has used three years' panel data (2008/9 to 2010/11) for the 2010/11 models, and two years for the 2013/14 models. However, the IP uses only one of each of those years' data to set the Upper Quartile. Using only one year's data makes the location of the Upper Quartile very dependent on the vagaries of a single year's costs, when much more data is available.

1.55 This has a particularly significant impact on the bottom-up approach, where, for example, IP modelling has the Upper Quartile at 93% of the average in 2008/9, but 96% in the following year. The first year has twice the catch-up efficiency challenge of the second – which cannot credibly be due to relative efficiency, but variability in the cost and activity data, imperfect knowledge of drivers and network specific factors etc.

1.56 As we refer to above, we propose that the benchmarking be carried out using the 8 year RIIO-GD1 period data to assess efficiency. In this case, the vagaries of a single year's data are not an issue.

1.57 However, if Ofgem adhere to the IP time periods, we propose that, similar to the use of several years' data for the panel regressions, the cumulative relative efficiency scores of several years' data are used to strike the Upper Quartile.

Technical assessments

1.58 In respect of the Technical Assessments used in some parts of the Bottom-Up benchmarking we have severe reservations, examples include:

- IS Capex, where a consultants technical review identifies a £12m pa cut, with no evidence provided and one that results in an allowance for NGGD that is less than [redacted] allowances despite NGGD having [redacted] the number of networks.
- In Environment, where despite having lower expenditure than the [redacted] IP has miss-understood our information and disallowed NGGD expenditure only, to a level below that of historic Asset Integrity spend whilst allowing other companies all [redacted]
- Business Support, where the IP uses an external benchmark, and use this to set an UQ allowance on individual activities, use in some activities questionable drivers for cross industry benchmarking (e.g. revenues)
- Training & Apprentices, the assessment penalises the company (NGGD) with the least cost per recruit whilst rewarding [redacted]
- Non-rechargeable diversion, are not funded to a level required to meet increasing requests. We provide additional evidence to suggest the requirement.

1.59 Some of these assessments, lead in themselves to another source of cherrypicking:

- IS Capex, where NGGD's organisational strategy of higher reliance on IT gets benchmarked out, but the consequential lower opex drives the UQ.
- Business Services both cherrypicks the external benchmark or the Network benchmark and uses them to set the allowance, despite the external advisors stating in their report not to.

1.60 Indeed, in IS capex the technical assessment approach was contradictory to previous regulatory decisions, where at Network Sale and re-affirmed in GDPCR1[1] they stated that their would be no additional cost for IDN customers as compared to NGGD customers due to loss of economies of scale. The approach does just that.

Insufficient account of Network Specific Factors

1.61 Further account needs to be taken of network specific factors, in particular for repex and opex activities. As invited by Ofgem, we set out, in the Appendix of this document, the most material factors, which are summarised as follows:

- The "base" repex productivity adjustment arising from factors such as increased pipe depth and additional tipping charges represents 20.3% of labour, as compared to the 15% presently assumed in IP, taken from the bottom of SGN's 15% - 20% range. Our detailed assessment of network specific factors is supported by the fact that Ofgem's sparsity data shows that London Network's areas of Inner and Outer London are 20% more densely populated than those of SGN.
- The additional repex network specific factors arising from the large diameter MP work programme in Inner London.
- The Emergency and Repair related factors which logically should be read across from the repex productivity factors described above. Given that Ofgem recognises the productivity impacts of London working for repex, because Repair in particular is a very similar physical activity, it is difficult to understand why a similar adjustment has not also been made for Repair. The IP actually assumes, due to its sparsity adjustment, that London is an easier network to work in than any other.

[1] Ofgem – National Grid Transco Potential Sale of Gas Distribution Network Business Final Impact Assessment (ref 255/04a) P115 8.47 & Appendix 6 p45 &46
GDPCR One Year Control Final Proposals – Dec 06 (ref 205/06) P46 para 1.34

Clawback of Apprentice and Training costs

1.62 A feature of IP with which we disagree is the proposed claw-back of any under-spend in the present price control period on Apprentices and Training. We oppose this on three grounds:

- It represents retrospective regulation, an effective re-opening of the GDPCR1 price control outcome, which only acts to increase regulatory uncertainty, and so add to the cost of capital.
- Retrospective regulation is a breach of the commitments made by Ofgem in the RIIO Handbook. Paragraph 5.6 states that "*Network company decisions will be influenced by their perceptions of the credibility of the regulatory framework. The RIIO model is designed to provide certainty and transparency about how the framework will work in the future. As part of this, we will seek to avoid any retrospective/ex post adjustments to the package agreed in final proposals and licence modifications as this could undermine regulatory commitment*."
- It is asymmetric - NGGD overspent significantly on Training and Apprentices from 2004/5 to 2007/8 compared to price control allowances, and has received no credit for this at all. We received zero allowance for Apprentices and Training from 2001/2 to 2007/8 inclusive, and yet recruited over 100 people in each of 2004/5, 2005/6 and 2006/7, and 150 in 2007/8. Although we have not received additional allowances ex post, we did not expect to receive any as this would have represented re-opening the price control

Process improvement

1.63 Due to all the weaknesses in the approach listed above, we do not believe that the IP approach is robust – as evidenced by the level of rebuttal in this IP response. We believe that one of the key causes for these weaknesses is that the process followed for cost assessment has been very poor. Examples of poor process are as follows:

- Finalisation of the cost assessment methodology was delayed repeatedly:
  - The March 2011 Strategy document talked of finalising the approach before the July 2011 Business Plans (paragraph 5.19).
  - The February 2012 Initial Assessment talked of *"refining the comparative efficiency analysis"* before the April 2012 Business Plans.
  - A June 2012 letter contained some high level details of the benchmarking, it included limited / high level approaches being taken on technical assessments and nothing on international benchmarking on business support activities.

- The present degree of clarity was only obtained with receipt of the detailed modelling and Ofgem's step-by-step guide, both received in August 2012.

- There has been working group dialogue on regressions and here the benefits in improved robustness of regression benchmarking can be seen

- However, outside of the workload issues around the replacement programme (and outputs/incentives) there has been limited dialogue and surprisingly few on the detail of core cost efficiency elements of:

  - The technical assessments

  - Our London factor submission (with exception of sparsity and pay), and

  - The overall modelling consolidation

1.64 Indeed, compared to the process carried out in GDPCR1 we see the limitations of the Initial Proposals process exposed. In GDPCR1 we had formal review and debate on technical consultants, a greater level of enquiring questions well as two formal consultations from Initial and Updated Proposals prior to the Final Proposals. This led to a greater degree of understanding and robustness of process and findings.

Chapter 2 - Regional adjustments, RPEs and ongoing efficiency

Question 1: Do you consider our approach for regional adjustments and company specific factors is appropriate, and if not what changes would you propose?

Summary of our position

2.1 Network specific factors are key to understanding apparent differences in relative efficiency, especially for London Network.

2.2 The Initial Proposal's approach to regional adjustments and company specific factors goes only part of the way towards recognising the factors that affect the varying cost of operating in different areas.

2.3 We welcome the treatment of reinstatement costs as 100% labour and also the application of London adjustments to a proportion of East of England's London area.

2.4 The IP's London pay uplift is reasonable, but for repex it is applied to too low a proportion of London's costs - as for RPEs there should be a standard labour proportion across Networks.

2.5 Sparsity is not linked to travel times, which are similar across all our Networks, but rather is linked to Emergency productivity, and so should not apply to Repair. There is a need to position FCOs in rural areas, where there is less work, but the 97% Emergency response standard needs to be met - Ofgem's conclusion at GDPCR1.

2.6 The London productivity adjustment should be increased from 15% to 20.3% using 2010/11 data i.e. at the top end of SGN's range. This is consistent with NGGD's parts of Inner and Outer London being 20% more densely populated than those of SGN.

2.7 The productivity issues that Ofgem accept apply to repex also apply to Repair and Emergency – as recognised by Ofgem at GDPCR1. We demonstrate that the London environment adds around £3.4m p.a. to London's opex costs.

2.8 £15m p.a. of additional London Medium Pressure repex costs, £8m p.a. of London MOBs have been allowed in the bottom-up assessment, but benchmarked out in the Totex regression. A normalisation adjustment needs to be made, otherwise around 50% of the cost is disallowed.

2.9 **Correcting for the above almost eliminates the apparent Totex efficiency gap for London. This outcome is rational, given that we operate all our Networks using the same processes and procedures - a Totex efficiency ranking in 2013/14 of 1, 2, 4 and 8 makes no sense.**

Justification of Our Position

2.10 Network specific factors are key to understanding apparent differences in relative efficiency, especially for London Network.

2.11 Before commenting on the IP approach to regional adjustments and company specific factors, it is helpful to summarise it first. There are 6 material elements:

- A London pay uplift, designed to reflect higher pay levels within the M25, on work which is deemed which needs to be carried out locally: for Contract labour this leads to a 23% adjustment for London Network, and for Direct Labour 19% - the difference being because a higher proportion of Direct labour costs reflect work that is not carried out locally, and so do not receive an uplift.
- The treatment of reinstatement costs as 100% labour.
- A two-way sparsity adjustment applying to all Networks, which Ofgem has applied to Emergency and Repair activities, which is intended to reflect additional time spent travelling in a sparse area. This is applied on the basis of population density data.
- An urbanity repex adjustment, representing a 15% labour productivity adjustment for work carried out within the M25.
- To reflect the area of East of England Network which lies within the M25, for example, Tottenham, the London pay and urbanity adjustments have been applied here too, based on the population proportions.
- Tier 2 and 3 repex.

2.12 In addition to the elements IP has identified, it would be helpful to consider whether our additional network specific factors close the apparent London efficiency gap.

2.13 Each is considered in turn below.

London pay uplift

2.14 The London pay uplifts are close to those we sought, and we believe to be broadly reasonable in principle.

2.15 However, there is one area of practical application which needs to be amended. At present the uplift is applied to that proportion of the cost of activities which are made up of pay, as per each Network's April update. We believe a notional number should be used instead because:

- The true proportion of costs which is made up of labour is subjective and difficult to assess consistently, especially where sub-contractors are used, or where services are bought from outside. We note that, in the April

submission, the apparent proportion of labour costs for repex activities varies by Network between 69% and 84% - which is not plausible.

- This would be consistent with the RPE assumptions. When applying RPEs Ofgem has adopted a standard, notional pay element of costs across all Networks. It would logical to use a similar approach for pay uplifts – although reinstatement would need to be treated as pay in this case.

2.16 However, if, despite the above, Ofgem intends to continue to use Network specific labour proportions numbers, please note that we have revised our London pay proportion of repex to 75% (see our letter dated 21st June 2012), and that if we treated all reinstatement as labour related, which in IP appears Ofgem's intention, that would rise to around 80%.

The treatment of reinstatement costs as 100% labour

2.17 We believe it is reasonable to treat 100% of reinstatement costs as labour related, as a significant majority of these costs are labour related, but the precise calculation is subjective and unclear.

Sparsity

2.18 We alone proposed two way adjustments in our November Business Plan (i.e. which act to reduce as well as increase revenue), one of which was sparsity, 3 of our 4 Networks being relatively urban.

2.19 The IP justifies a sparsity adjustment on the grounds of additional travelling time in rural areas. We believe these grounds to be incorrect. We considered the travelling time issue when we drew up our November 2011 Special Factors submission, and decided against including it for two reasons:

- From our SMART travel data (new tracking systems fitted to company vehicles) there was no clear pattern of journeys in rural networks taking longer than urban ones – it was true that rural journeys were longer, but they were also faster, there being less traffic congestion. In any case, the difference between journey times was small between Networks. The table below shows the ranking of average journey times (excluding first and last journeys of the day) in each of our five operational areas across Emergency and Repair activities between July and September 2010.

Figure 2.1 - Repair and Emergency average journey times July - Sept 2010

	Average minutes journey		
	Repair	Emergency	rural ranking
East Anglia	17.1	13.1	1
East Midlands	16.6	13.2	2
London	16.9	12.7	5
North West	15.4	11.9	4
West Midlands	16.0	12.1	3
NGGD	**16.3**	**12.5**	

- When we considered the results, we decided that they were to be expected – FCOs in particular need to reach work locations in a set period of time, and they are positioned to do so, so you would not expect there to be a great deal of variation between journey times.

2.20 What we did find however, the evidence for which was provided in our November submission, was a strong relationship between the rural / urban nature of a network and the relative productivity of Emergency FCOs. This was because, to meet the 97% Emergency standards, FCOs have to be positioned to cover rural patches, but because there is less work than urban areas, they are less productive. There is not the same strong relationship between sparsity and Repair productivity because the 97% time restricted attendance standard does not apply.

2.21 This was exactly what Ofgem found at GDPCR1 i.e. that Emergency was the only activity for which there was a strong case for a sparsity adjustment. *"The main justification for providing an additional sparsity allowance is associated with the need to provide Emergency service cover for all customers within the territory served within the 1 hour standard."* Paragraph 3.68, December 2007, Final Proposals.

2.22 We believe, not only that the sparsity adjustment should apply only to Emergency and not Repair, but also that the absolute size of the adjustment is too large, and larger than the amount Ofgem intended.

2.23 In our Regional Factors submission we identified that our Networks should have a sparsity adjustment, reducing allowed costs, of £1.7m p.a. – in contrast the present Ofgem number is £0.5m above that, so we believe it is too high – due to the application to Repair.

2.24 We also believe that the adjustment is larger than Ofgem intended. The intention appears to be set the maximum adjustment at the level of £2.2m p.a., as found in GDPCR1, when a one-way (rural only) adjustment was applied. Over the RIIO-GD1 period, the difference between the minimum (most urban) and maximum adjustment (most rural) is actually £4.6m – i.e. twice the intended level.

Urbanity

2.25 IP Cost Efficiency paragraph 1.12 states that *"…we accept arguments that in practice there are lower levels of productivity in London associated with more congested infrastructure, depth of infrastructure and reduced access."*

2.26 IP proposes a 15% London productivity adjustment for repex, mains reinforcement and connections work within the M25, but with no corresponding adjustment for Repair or Emergency. The 15% was taken from the bottom end of a range produced by Scotia, of 15%-20%, being a London repex productivity effect.

2.27 In respect of the application of the IP urbanity adjustment, we note that in the data files the proposed adjustment has not been made to mains reinforcement.

2.28 In respect of the level of the urbanity adjustment, in the attached Appendix, we set out, as invited by Ofgem, a summary of our London productivity related Network Specific Factors. In respect of repex in 2010/11 these amounted to £11.1m, which represents 20.3% of London Networks' non MOBs costs. The main items are in respect of:

- Replacement pipe depth and hole sizes £9.4m: the calculated impact on labour and material costs of London pipes being on average 9% deeper than pipes of a similar diameter elsewhere.
- Tipping costs £0.3m: the additional cost of tipping in London, due mainly to higher tipping charges, and partly to additional tipping volume due to increased pipe depth.
- Relay After Escape costs ex Repair £1.4m: the additional job time, hole size, JCB hire (to break concrete under-surfaces) and Riser Manifold costs associated with London Relay After Escape.

2.29 That our 20.3% calculation is around the top of Scotia's range seems logical given that NGGD operates in more dense parts of London than Scotia. The table below, taken from Ofgem's sparsity data, shows that in Inner and Outer London, London Network operates in areas that are on average 20% more densely populated than those of Scotia.

Figure 2.2 - London population density - London v Southern (Ofgem data)

Ofgem population and area data - Inner and Outer London							
	2010 population		Area		Density	Density	London
	Southern	London	Southern	London	Southern	London	multiple
	Thousand	Thousand	km squared	km squared	per km	per km	times
Inner London	822	2,111	93	206	8,876	10,231	
Outer London	1,632	2,700	454	689	3,592	3,920	
All London	2,454	4,811	547	895	**4,486**	**5,374**	**1.20**

2.30 The IP contains no adjustment for London productivity for either Emergency or Repair. In fact, because of the application of a sparsity adjustment the IP assumes that London is an easier area in which to work than elsewhere!

2.31 This is despite Ofgem accepting the fact that *"in practice there are lower levels of productivity in London associated with more congested infrastructure, depth of infrastructure and reduced access."*

2.32 Repair is a very similar activity to repex and Emergency also suffers from some of the same productivity issues as Repex, consequently similar adjustments should apply. This was also the view taken by Ofgem at GDPCR1 when London Network was allowed £2.2m p.a. (2010/11 prices) for these factors.

2.33 In the attached Appendix we have set out the main productivity related factors associated with Emergency and Repair. We quantify these as worth £1m p.a. for Emergency, and £2.4m for Repair in 2010/11, which represent 10% of Emergency costs and 15% of Repair costs.

2.34 The key factors were for:

- Emergency environment £1m p.a: in particular the far higher proportion of flats, making and built-up environment, making it hard to detect and resolve PREs.
- Repair environment £2.4m p.a: from larger diameter mains repairs (which are more difficult to resolve than smaller repairs), the same pipe depth and hole size issues as repex, plus additional use of JCB hire to break concrete beneath the wearing course .

East of England within the M25

2.35 The IP makes the adjustments to that element of East of England Network's costs which fall within the M25 for London pay, repex urbanity and, per the IP, mains and connections capex.

2.36 We support the application of all the London adjustments for this element of East of England, including those for Repair and Emergency.

Non Tier 1 repex

2.37 We have identified additional Network specific factors in respect of 5 issues for Non Tier 1 repex:

- London Medium Pressure repex;
- London Medium Pressure capex;
- MOBs work;
- Permali Meter boxes; and
- Customer initiated service replacement.

2.38 As we described in our April Update, quite different to the replacement work which London Network has carried out in recent years, over the RIIO period we plan to replace 84km of Medium Pressure mains in Inner London. We estimate the unit cost at around 3 times that of comparable LP main, due largely to the location, in places like Battersea, Fulham, Hyde Park and Islington. We have calculated the network specific factor as £13m p.a., including London's additional pay uplift. Further details are given in the Appendix.

2.39 Ofgem attempted to allow the cost of this programme in repex, but we believe that this was not successfully reflected in IP, in particular:

- The bottom up assessment, which represents 50% of allowed costs, disallowed part of the Tier 2 and 3 workload, but using an average unit cost for all Tier 2 and 3 workload. Because the MP workload was allowed, but its costs are far higher than other Tier 2 and 3 repex planned for London Network, the effect of removing the workload using average unit costs is to understate the required allowance significantly.
- The Totex regression, which also represents 50% of allowed costs, makes no additional allowance for the MP work. Given its relatively high unit costs, this means that the cost of the MP work has been largely benchmarked out.

2.40 In addition, part of the MP replacement was placed in capitalised as mains reinforcement. This was almost entirely 630mm steel, due to building proximity, and included a £3.6m Thames crossing, and so is projected to cost 9 times other >180mm LP reinforcement in London.

2.41 The IP has treated this as Tier 1 repex of 250mm, which flows through both the bottom up and top down regressions, with no specific allowance, and so does not even receive an allowance associated with 630mm main. We calculated the Network specific factor at £2.2m p.a., including London's additional pay uplift.

2.42 In respect of MOBs work, we note that the costs associated with this activity have been wholly allowed in the bottom-up assessment of non Tier 1 repex, but benchmarked out with no specific allowance in the Totex regression. MOBs work is more prevalent in London and Southern Networks than elsewhere, and has a cost in London alone of £7.7m p.a.

2.43 In respect of Permali meter box replacement in West Midlands Network, as explained in our Network Specific Factors submission, these meter boxes are now classified as "at risk" under Gas Safety Regulations and so must be replaced before any meter exchange, including for SMART meters, is undertaken. We propose a network specific factor of £1.4m p.a.

2.44 For Permali, and also for the customer initiated service replacement, the costs and workloads have been disallowed from the bottom-up assessment, but in the Totex regression the costs have been included but without a driver in the CSV, which needs to be corrected.

High level London view

2.45 The IP ranks London as being the least efficient Network in 2013/14 and disallows the highest proportion of any Network's costs as inefficient – 22% before workload.

2.46 Because we run all our Networks on a consistent basis, with the same structures and processes, and a significant proportion of opex is incurred centrally and then shared across our Networks, it cannot be right that we run both the most efficient and the least efficient Networks. Our Networks rank as 1,2,4 and 8 in the Ofgem Totex regression for 2013/14.

2.47 The reason why London ranks poorly is because it is significantly different to the other Networks, and the IP does not reflect enough of these differences in Network Specific Factors.

2.48 Because the calculation of allowances has been carried out using 4 different methods, and changing the network specific factors will change the regressions, it is extremely difficult to precisely state what effect this will have on the efficiency position.

2.49 Nevertheless we have attempted to calculate the effect on the Totex regression approaches, as these are the least complex and also provide more robust answers than the Bottom-Up, and the results are shown in the table below.

Figure 2.3 - High level London "efficiency" gap

RIIO average London Totex "efficiency" gap and network specific factors		
Totex allowance, pre workload adjustment	**£m p.a.**	**£m p.a.**
- 2010/11 based regression, post normalisation, pre workload adjs	188	
- 2013/14 based regression, post normalisation, pre workload adjs	192	
Average totex regression allowance, pre IQI		190
Average normalised plan, pre workload adjs		219
Apparent totex efficiency gap		**-29**
Network specific factors to amend		
Repex labour proportion	2	
Removal of sparsity adjustment from Repair	1	
Repex urbanity - increase from 15% to 20%	3	
Emergency urbanity adjustment	1	
Repair urbanity adjustment	2	
Medium pressure replacement - repex	13	
Medium pressure replacement - capex	2	
MOBs work	8	
Gross amendments to network specific factors		**32**
Adjust for estimated pay double count		**-4**
Amended Totex efficiency gap		**-1**

2.50 The table shows that, after taking account of the additional Network Specific Factors, the apparent London efficiency gap very largely disappears.

2.51 Such an outcome is to be expected, given that we run all our Networks in the same way.

Question 2: Do you agree with our assumptions for real price effects and ongoing efficiency?

Overview

2.52 We set out our justification for changes to the RPE and Ongoing Efficiency in separate answers, which in short we challenge that both the Labour short term and the Ongoing Efficiency assumptions are not justified and need changing.

2.53 On RPEs, the position set out by Ofgem are understood with the exception of the short term Labour element, for which

- The 2011/12 assumption is too low given based on the Private Sector, whereas Networks operate on within the energy and process sectors, and
- The 2012/13 and 2013/14 assumptions are also too low being based on the Whole UK economy. This is not valid as there are demonstrable differences to the public and private sector. The latest forecasts for the energy/prices sectors also see that our employment market earnings rises are ahead of the whole private and thus believe our plan submission is still reasonable.

2.54 The Ongoing Efficiency assumptions are also too high, this answer will show that the analysis

- has not taken into account two factors that would reduce the 1% assumption, that of effect of UK economy growth on the factor (to which networks do not do, in fact you can argue we are in decline) and double count with the asset replacement expenditure with the separate treatment of repex impact on repair, emergency and relay after escapes.
- Is not correct in rejecting the Competition Commission acceptance of the double count with catch-up. We set out the reasons why the IP rationale is wrong.

Real Price Effects

Summary of our Position

2.55 We support the notional structure proposed in order to evenly apply RPE to the networks' allowances. The position taken by Ofgem on materials (based on more recent forecasts then when we set our plan assumptions) and the "other" items we identified seemed reasonable until a few days ago.

2.56 However, in the last few days we have become aware that the ONS is about to issue a consultation on reducing or eliminating the wedge between RPI and CPI caused by the 'formula effect'. To the extent that headline RPI does not drive the nominal increase in prices, in particular this would be expected to be the case for material costs, the effect of such a change would be to increase RPEs above the previously expected level. Whilst the effect cannot be quantified at the moment, this implies that Ofgem should consider amending the IP assumptions for material costs to incorporate a central case of the outcome of the ONS consultation.

2.57 The IP allowances for Real Price Effects (RPEs) have clearly been set following some detailed review of historical data and an averaging of the latest UK economic forecasts, we have identified a number of concerns on the short term labour assumptions as applied to gas distribution networks.

2.58 On labour RPEs the IP analysis is close to our position of a longer term rate of 1.5% p.a., having been set at 1.4% p.a. However, over the nearer term, 2011/12 to 2013/14, we believe the IP sets inappropriately low values.

2.59 The IP's 2011/12 figure is based on the Private sector, however we operate within a subset of the private sector. Ofgem's selected comparators are not representative of the skilled 'engineering' market within which we operate. We are disappointed that Ofgem have not considered the evidence we provided in respect of the energy and process markets used in our Trade Union pay negotiations – these being the most appropriate markets that we operate within.

2.60 For 2011/12, the evidence demonstrates the differences within the Private sector and the fact that for the markets within which networks recruit our plan assumption (adjusted for outturn RPI) was -1.6%, which was at the high negative range of the sub-sectors within which we operate.

2.61 Having based 2011/12 on the Private sector, the IP then sets the 2012/13 and 2013/14 figures on HMT's Whole Economy forecasts, covering a period when the public sector, which represents 20% of the whole, has a pay freeze. In the near term, the IP's argument that private sector pay rises should be close to those of Public sector is clearly false, given that the private sector is expected to grow to support the public sector under government policy.

2.62 It is possible to derive an implied private sector RPE for 2012/13 and 2013/14 from the HMT forecast, which suggests labour RPEs well above those of IP.

2.63 Base on data from our engineering and process industry comparators, the labour RPEs in our November Plan for 2012/13 and 2013/14 appear reasonable, even low.

2.64 The inappropriately low level of the proposals also places the networks in an untenable position of investing in the training of a significant number of new recruits, only to see attrition levels rise, stranding the investment as people leave to other companies in the markets within which we operate.

2.65 **We would ask Ofgem to revise the Labour RPE forecasts for 2011/12 to -1.6% and 0.0% and 0.8% for 2012/13 - 2013/14 as per our Business Plan, and also to consider the latest development re the ONS CPI/RPI consultation.**

Justification of Our Position

2.66 We support the use of a standardised notional structure of GDNs as this overcomes the inherent reporting differences in different network companies' figures and allows the application of the RPE factors evenly across the eight networks. However this structure has not been applied consistently in the area of Network Specific Factors, which we set out in the answer to Chapter 2, Question 1 - Regional factors.

2.67 On materials, the IP allowance is set between our submission and that of the other companies and are based on a more recent set of forecasts than that from which we set our assumptions. Given that more recent forecasts are lower, until a few days ago we believed these to be reasonable, although there was clearly an issue around volatility and risk for materials RPEs. We also believed that, with the exception of labour, the IP position on "other" cost items is broadly reasonable.

2.68 However, in the last few days we have become aware that the ONS is about to issue a consultation on reducing or eliminating the wedge between RPI and CPI caused by the 'formula effect'. To the extent that headline RPI does not drive the nominal increase in prices, in particular this would be expected to be the case for material costs, the effect of such a change would be to increase RPEs above the previously expected level. Whilst the effect cannot be quantified at the moment, this implies that Ofgem should consider amending the IP assumptions for material costs to incorporate a central case of the outcome of the ONS consultation.

2.69 In respect of Labour RPEs, the analysis is close to our position of a longer term rate of 1.5% p.a., having been set at 1.4% p.a. However, for the years 2011/12 to 2013/14 we believe the values are inappropriately low.

Labour 2011/12

2.70 We have reviewed Ofgem's analysis for 2011/12 which is based on analysis of the Office of National Statistics (ONS) for average weekly earnings of the private sector including arrears. The IP figure is -2.9%.

2.71 In respect of this particular data set, we believe that the inclusion of arrears skews the data slightly. Arrears represent a timing difference, an amount of pay which is shown in wrong period, so the data would be more accurate without them. The ONS data set without arrears reduces the private sector pay increase in 2011/12 to -2.8%.

2.72 However, NGGD has a far more fundamental concern - that the IP does not use the right subsets of the private sector within which we operate. To base RPEs on the entire private sector is inappropriate as we do not recruit and retain our workforce from large sections of the private sector, e.g. not from wholesalers or retail industries.

2.73 This was supported by the Hay Group, who in their benchmarking report provided in our November Plan, stated that "…*it is certainly an option to use a very general*

'all organisations' market as the comparator group. This, however, would include many organisations which have nothing in common with National Grid".

2.74 We set out the market sectors within which we operate in our November Business Plan[2], a key one being engineering, where the market is tight.

2.75 The UK national engineering skills shortage, together with the unique skill set required by National Grid means that we cannot readily recruit experienced individuals on the open market. This is evidenced by:

- Our resourcing strategy to "grow our own" through a series of apprentice, engineering trainee and graduate programmes. Typically the 2 year training programme for an apprentice amounts to £73K before s/he is equipped to start work and further training/lost opportunity costs for such an individual over the next 20 years amounts to a further c£100K. Unless we retain our workforce by paying benchmark salaries there is a high risk of individuals leaving to join competitors.
- Competitor organisations already paying higher salaries. In a recent campaign for Commissioning Engineers, the recruitment agency approached more than 38 qualified engineers who declined to apply as they were already earning considerably more than our proposition.
- Other large engineering employers, for example Rolls-Royce has over 600 vacancies for graduate and chartered engineers they simply cannot fill.

2.76 Data from Towers, Watson, Perrin and Hay Group shows that the sectors within which we operate have experienced higher RPEs during 2011 than the Private sector as a whole:

Figure 2.4 - Sub-Sector Pay Rises

		2011 Actual	2012 Fcst
RPI		5.2%	3.1%
Pay Rises			
Energy	TWP	4.6%	3.0%
Process Industries	HAY	3.5%	4.7%
RPEs			
Energy	TWP	-0.6%	-0.1%
Process Industries	HAY	-1.7%	1.6%

2.77 This is also consistent with our November Plan[3], as adjusted by the difference in inflation expectations. Our November Plan assumed a -0.5% p.a. labour RPE factor for 2011/12, based on a nominal pay increase of 3.2% less an assumed RPI of 3.7%. However RPI for the year out-turned significantly higher at 4.8%, making our real pay increase -1.6%.

[2] A3.2 Real Price Effects – Section 2 Paragraph 2.13
[3] A3.2 Real Price Effects

2.78 **The evidence suggests that our plan projection, as adjusted for out-turn RPI was accurate at -1.6% and also at the lower end of the RPE for the sectors within which we operate. Consequently, we would assert that our plan was robust with regards the 2011/12 RPE for labour**.

Labour 2012/13 – 2013/14

2.79 In the medium term the IP assumes a Labour RPE at -0.9% and -0.2% based on HMT Summary of Independent Forecasts (new forecasts) average real earnings growth for the Whole Economy, arguing that:

- That there is no systematic difference between private sector and whole economy wage growth, and therefore in the longer–term Ofgem would expect this relationship to hold.
- This encompasses the views of many independent forecasters.
- There was not a material difference between the OBR forecasts and those of HMT.

2.80 In respect of this particular data set, we note that the use of "new forecasts" i.e. those received in the last month, removes the majority of forecasts – the whole period covering 3 months forecasts. It would be more logical to use the 3 months' forecasts, which would seem to increase the RPE by around 0.1%.

2.81 In addition, we are surprised by the comment that the difference between the OBR forecasts and that of HMT is not material – by 2013/14 the difference is around 1.4%, which, given that around 70% of our costs are labour, would appear significant.

2.82 However, we have two fundamental issues with the Initial Proposals approach:

- First, it is not credible to argue that for the years in question, 2012/13 and 2013/14, there is likely to be no material difference between public and private sector pay rises at a time of a prolonged public sector pay freeze.
- Second, given the market sectors within which we operate, the pay RPE assumption should actually be above that for the private sector as a whole.

2.83 It is unreasonable for the IP to argue that because there is no long term difference between private and public sector pay rises it is reasonable to apply a Whole Economy-based pay RPE projection over the short term, i.e. 2012/13 to 2013/14. This is demonstrated by looking at recent history, where there is clear, significant difference between the pay rises awarded to the public and private sectors, as shown in the chart below.

Figure 2.5 – Comparison of Historical Pay trends

Source ONS

2.84 The chart shows that in 9 of the last 11 years, the difference between Public and Private sector pay increases has been 0.5% or greater.

2.85 In recent years until 2011/12 public sector pay rises have been larger than those in the private sector – but the situation reverses in 2011/12 and private sector increases would be expected to significantly exceed those of the public sector where there is a pay freeze.

2.86 Clearly, the long term is irrelevant to the circumstances which pertain to 2012/13 and 2013/14.

2.87 However, the HMT Summary of Independent Forecasts can be used to derive a figure for expected private sector pay increases for 2012/13 and 2013/14.

2.88 ONS data shows that around 80% of employees are in the private sector, and 20% the public sector. We also know that public sector employees are subject to a pay freeze. Using this information, we can calculate what the implied private sector pay rises are that lie behind the HMT data. The calculation is shown in the table below.

Figure 2.6 – Derivation of Private Sector RPE for 2012/13 and 2013/14

HMT derived private pay rises	**2012/13**	**2013/14**		
HMT Whole Economy nominal pay rises	2.20%	2.50%	a	
less: IP RPI	-3.10%	-2.70%	b	
IP labour RPE	-0.90%	-0.20%	c	a-b
ONS public sector employee proportion	20%	20%	d	
ONS private sector employee proportion	80%	80%	e	
Assumed public sector pay rise - nominal	0.0%	0.0%	f	
Backworked private sector pay rise - nominal	2.75%	3.13%	g	
Whole economy nominal pay rise	2.20%	2.50%	h	(d x f)+(e x g)
Private sector real pay rise	**-0.35%**	**0.43%**	i	g+b

2.89 Backing out the public sector element of the HMT forecast data reveals the implied private sector pay rises of -0.35% in 2012/13 and +0.43% in 2013/14 – significantly above the assumptions made in IP.

2.90 We also note that the last OBR forecast, from March 2012, also projected private sector pay increases of -0.6% in 2012/13 and 1.2% for 2013/14, above those implied by HMT. Although this represents a single source, the uses to which OBR forecasts are put suggests that it is more authoritative than most forecasts.

2.91 We argued in paragraph 2.72 onwards that the labour markets within which NGGD operates are a subset of the private sector which are experiencing higher cost pressures than the private sector as a whole.

2.92 For 2012/13 this is demonstrated by:

- Income Data Services' May forecast for the process sector, that earnings will rise by 4.7%, in 2012, and by 3.0% for the engineering sector.
- Towers, Watson, Perrin data which forecasts an earnings rise of 3.0% for the energy sector for 2012.
- The fact that another major engineering employer, Jaguar Land Rover, has recently agreed a pay increase of around 5.5%.

2.93 Our November Plan contained labour RPE projections of 0.0% for 2012/13 and 0.8% for 2013/14. While these are a little above the implied HMT projections for the private sector as a whole, they appear significantly below those expected in the labour markets in which we operate, and therefore far more reasonable than the assumptions in the IP.

Labour Summary

2.94 For 2011/12 to 2013/14 our labour RPE should reflect the fact that we operate within the process and engineering subsets of the private sector labour markets, within which there is competition for scarce labour resources. Unless we retain our workforce by paying benchmark salaries, there is a high risk of individuals leaving to join competitors.

2.95 IP assumed a labour RPE of -2.9% for 2011/12, based on the private sector as a whole. This should be amended to reflect the fact that, for 2011/12, the market sectors within which we operate experienced labour RPEs in the range of -0.6% to -1.7%. Consequently a figure of -1.6% consistent with our November Plan, as adjusted for out-turn RPI would seem entirely appropriate.

2.96 IP also assumed a labour RPE of -0.9% for 2012/13 and -0.2% for 2013/14, based on HMT forecasts for the Whole Economy, including the Public Sector. Given that the public sector is under a 3 year pay freeze, it is wholly inappropriate not to adjust for this, on the grounds that there is no systematic difference between private and public pay growth.

2.97 Given the pay rises awarded in process and engineering sectors, the assumptions made in our Business Plan of 0% RPE in 2012/13 and 0.8% in 2013/14 seem robust and reasonable.

2.98 **We propose Ofgem revise the Labour RPE forecasts for 2011/12 to -1.6% and 2012/13 - 2013/14 to use the assumptions of 0% and 0.8% as contained in our November Business Plan, as the IP places inappropriate levels of pay restraint for a commercial organisation competing for scarce skilled resources within subsets of the private sector labour market.**

Ongoing Efficiency

Summary of our position

2.99 The IP assumes ongoing efficiency of 1% of controllable opex, and 0.7% for capex and repex. We consider these assumptions to be unreasonably high for a variety of reasons.

2.100 Firstly, there are two factors that the IP does not consider:

- The comparator data from which the 1% opex efficiency was taken had experienced economic growth over time, which enhances productivity growth – in contrast, gas distribution is in a period of decline, which reduces productivity growth.
- The comparator data included the benefits arising from asset replacement expenditure. In contrast, the IP treats the opex workload reduction due to mains replacement as additional to the comparator based number.

2.101 In addition, NGGD do not agree with parts of Ofgem's analysis and assumptions:

- Although the IP does not accept the existence of catch-up efficiency outside of regulated sectors, the OECD, Competition Commission, Ofwat, ORR and empirical evidence all support the idea that average industry productivity improvements include an element of catch-up. Consequently to apply average productivity improvements to the Upper Quartile of efficiency represents a double-count. An adjustment of at least 20% seems justified.
- We are not clear whether the 1% opex ongoing efficiency assumptions from the Business Plans of NGN and WWU were before or after the effects of replacement investment on opex workload. If after, this would suggest that their underlying opex efficiency was well under 1%. Indeed we also do not believe that the other companies considered the first two points above.

2.102 The key regulatory precedent is from the Competition Commission's most recent relevant decision i.e. Bristol Water. This was the source of our Business Plan assumptions of 0.5% for opex before investment workload effects (0.8% after these), and 0.4% for investment.

2.103 **Given the above summary of the critique (for which details follow) of Ofgem's initial views, NGGD still believe that the position taken in our business plan is justified and should be used as the basis for the Final Proposals.**

Justification of Our Position

2.104 We welcome the openness and clarity with which Ofgem has set out its case for the levels of ongoing efficiency adopted in IP.

2.105 In the IP Ofgem has assumed a reduction in controllable opex of 1% p.a. before workload effects (comparable to our 0.5%), and 0.7% p.a. for capex and repex.

2.106 In arriving at the IP assumptions, Ofgem considered TFP growth in different sectors of the UK economy from 1970-2007, using two different methods of measurement, plus some previous regulatory decisions, and evidence provided by some network companies.

2.107 In contrast, in our November 2011 Business Plan and April 2012 Update, we assumed an ongoing controllable opex reduction of 0.5% p.a. before workload effects, equivalent to 0.8% p.a. after workload effects. (Once shrinkage is included, the ongoing opex reduction rose to 1.25% p.a., and factoring in the cost of carbon raises our proposed ongoing efficiency to 2.4%p.a.) For capex and repex we assumed a reduction of 0.4% p.a.

2.108 Our assumptions for controllable opex, capex and repex were based on the Competition Commission's report on Bristol Water.

2.109 While the appropriate level of ongoing efficiency is clearly a "grey" area, there are a number of pieces of evidence which suggests that the opex reductions in the IP in particular are significantly high. Our evidence is as follows:

- the declining gas distribution industry;
- the impact of investment efficiency;
- the Upper Quartile double count;
- evidence from other companies; and
- regulatory precedent.

2.110 Each is considered in turn below.

The declining gas distribution industry

2.111 Most of the period covered by the EU Klems productivity data (1970 – 2007) was a period of economic growth, productivity tends to grow more in periods of growth than decline, yet the gas industry is in decline.

2.112 The OECD Measuring Productivity Manual, paragraph 198 states that *"… productivity growth tends to accelerate during periods of economic expansion and decelerate during periods of recession".*

2.113 NGGD's gas distribution networks have seen a fall in weather corrected demand of around 20% since 2000, and we and Redpoint project it to fall further over the RIIO-GD1 period. In addition, the workload assumptions associated with one of our main opex activities, Repair, of both we and Ofgem, project a significant fall over the RIIO-GD1 period, with the consequential additional impact on the Emergency workloads.

2.114 Given that the UK comparator measure of productivity growth has been accentuated by economic growth, it would be reasonable to reduce the UK comparator measure in the light of the declining demand and opex workloads expected to continue in gas distribution.

The impact of investment efficiency

2.115 A further issue concerns the effect of investment efficiency. In our Business Plan, our planned investment, largely but not wholly due to mains replacement, has the effect of reducing controllable opex by a further 0.33% p.a.

2.116 The UK comparator measure of productivity growth is at constant capital, but this will still include the effects of investment in replacing existing equipment – analogous to mains replacement in gas distribution.

2.117 Consequently, it is illogical to apply a 1% p.a. opex productivity growth assumption on top of an existing 0.33% p.a. from investment, largely replacement activity. It would be more logical for the productivity growth from the UK comparators to be reduced by the 0.33% gain from investment effect on opex workload, largely from mains replacement.

The Upper Quartile double count

2.118 We have consistently argued, based on the findings of the Competition Commission in the Bristol Water inquiry, that the historical UK comparator data represents industry average productivity, which contains an element of catch-up efficiency. The catch-up element needs to be removed, just leaving the frontier shift element of productivity, before this is applied to Upper Quartile gas distribution networks.

2.119 The IP argues that the Upper Quartile double count adjustment does not need to be made because *"…we have excluded industries (namely utilities) from our comparator set where we would expect there to be systematic catch-up"* – paragraph 3.19 of the Cost Assessment document.

2.120 Paragraph 3.20 of IP continues *"…for our comparator industries, we consider that the historical change in productivity is a good proxy for the movement in the efficient frontier. Consider if this were not the case. For example, if our historical productivity measures (i.e. based on Klems) were materially greater than the actual movement in the efficiency frontier over the same period, this would imply*

systematic convergence of all companies in all industries to the efficiency frontier. However, it is not clear to us that the distribution of companies' relative efficiency across all industries at the end of our data period should be materially different from the distribution of technical efficiency at the beginning."

2.121 The first argument in IP is that there is no systematic catch-up in the comparator set. This view is not held by the OECD, as demonstrated by the following two quotations from The Measuring Productivity Manual. Note that "efficiency change" represents catch-up in UK regulatory terminology.

- The table on page 18 states that *"Conceptually, the KLEMS productivity measure captures disembodied technical change. In practice, it reflects also efficiency change, economies of scale, variations in capacity, utilisation and measurement errors."*
- Paragraph 191 states that *"…pure changes in efficiency (as opposed to shifts in the technological frontier) are common empirical phenomena."*

2.122 We note that not only the Competition Commission, but also Ofwat and ORR have accepted this point.

2.123 Having demonstrated that catch-up is a widespread phenomenon, there remains the question of how large a proportion it represents of UK comparators' productivity growth.

2.124 An academic study that examined the overall productivity performance of the UK economy found that, on average, 75% of the economy wide TFP growth is due to frontier shift (Fare, Grosskopf, Norris and Zhang 1994).

2.125 An assumption that 25% of comparator productivity improvements are due to catch-up is also consistent with UK regulatory precedent. Based on a 2005 Oxera / LEK study, ORR in 2008 made a 25% assumption, and, although not entirely transparent, the Competition Commission appears to have made an adjustment of at least 20% in its Bristol Water inquiry. This compares to NGGD's Business Plan calculation of 28%[4].

2.126 In addition to the empirical argument above, the second, higher level IP argument was that if historical productivity were materially greater than the actual movement in the efficiency frontier, this would imply systematic convergence to the efficiency frontier – which was not credible.

2.127 We agree that we would not expect systematic convergence to the frontier. However, neither would we expect relative efficiency for different organisations to be set in stone forever – which is the IP's present assumption.

2.128 Instead, we would expect there to be changes in relative efficiency over time, with a continuous process of different companies innovating, advancing the frontier, and then being caught up, overtaken by another company innovating etc. This is a world of constant flux and differences in relative efficiency, rather than efficiency gaps being either set in stone or entirely removed.

[4] November Business Plan, Appendix A7.2 UQ Shift - Figure 1

2.129 On both a conceptual and empirical level we do not believe the IP position on Upper Quartile double count is right or reasonable.

Evidence from other companies & Regulatory

2.130 A further element of the justification of the IP position is evidence from some network companies. Assuming that this evidence was used in the Business Plans of the other Networks, we are not clear whether the 1% productivity growth assumed by WWU and NGN included investment workload effects. If they did, then this would be consistent with a productivity shift of well under 1% p.a. before workload effects.

2.131 Even if they did include both, we do not believe that the other companies at all considered the other factors we raise with regard to the impact of declining industry and the comparator industries including asset replacement.

2.132 The final justification for the IP productivity growth assumptions is regulatory precedent. As set out in our Business Plan, we believe that the key regulatory precedent is that of the Competition Commission, and we set our Business Plan assumption of 0.5% controllable opex productivity growth before investment workload effects, 0.8% after these, and 0.4% on investment using the approach of the Competition Commission.

Conclusion

2.133 We believe that the IP assumption of 1% p.a. opex productivity growth to be unreasonably high because:

- The comparator data is from an economy which has grown significantly since 1970, and (as per the OECD) economic growth enhances productivity growth, whereas gas distribution is in decline, and so productivity growth would be expected to be lower.
- The comparator data based figure of 1% p.a. is at constant capital but includes the effects of replacement investment. The IP is inconsistent with this in that it adds the benefit of replacement investment on opex workloads, so the IP productivity growth is actually well above 1% of the comparators, measured on a consistent basis.
- Re the Upper Quartile double count, the OECD and empirical evidence show that average efficiency productivity improvements include an element of catch-up, an assumption supported by the Competition Commission, Ofwat and ORR – an adjustment of at least 20% appears reasonable.
- The Business Plans of NGN and WWU included opex productivity growth of 1%, but it is not clear whether the opex workload benefits of investment were included.

- The IP justifies its opex productivity assumptions in part on Regulatory precedent. However, it takes no account of the findings of the Competition Commission, on which we based our approach.

2.134 For investment, the IP assumption of 0.7% p.a. appears high, being well above the regulatory precedent provided by the Competition Commission's 0.4%, on which we based our plan.

2.135 **We propose that our Business Plan assumptions remain appropriate i.e. 0.5% for opex before investment effects of opex workload (0.8% after these), and 0.4% for investment.**

Chapter 3 - Total expenditure and total opex, capex and repex analysis

Question 1: Do you consider our approach to totex is appropriate, and if not what changes would you propose?

Summary of our position

3.1 **We do not believe that IP totex approach is very robust, and propose a significant number of improvements**. The issues we have identified are:

- The regression drivers and their weights are broadly reasonable although, the Reports figures are distorted by unrealistic deterioration assumptions and the MEAV roll-forward has anomalies.
- We are disappointed that the 8 year plan data is not benchmarked, only data for 2010/11 and 2013/14. Only by using the 8 years' data can the plans be fully understood.
- The additional outputs we were encouraged by our stakeholders to provide, such as CO monitoring have either received no or very limited cost assessment.
- In particular for non-standard items such as MOBs work or our MP repex programme, it is internally inconsistent, with costs that are allowed under the bottom-up approaches being wholly or largely disallowed in the totex approaches. The result is that costs for these activities are broadly disallowed by 50%.
- It is unstable in that it uses one year's data to determine Upper Quartiles, when more years' data is available.
- It takes insufficient account of network specific factors.

Justification of Our Position

3.2 Before commenting on the IP totex approach, it is helpful to summarise it first. Totex regressions are based on a number of years of panel data but use two years' specific data, 2010/11 and 2013/14, to give average cost line equations.

3.3 For each year of the RIIO period, Ofgem's (adjusted) driver information is fed into these equations to give average cost allowances, to which an Upper Quartile adjustment is made, based on the relative efficiency of each Network for a single year, either 2010/11 or 2013/14.

3.4 The justification for our position is set out in a number of sections below:

- Regression drivers and weights
- Time period of cost assessment
- Additional outputs
- Internal inconsistency
- Model instability
- Insufficient account of Network Specific Factors.

3.5 We expand on these arguments below.

Regression drivers and weights

3.6 We have consistently supported the principle of Totex benchmarking, as this should enable customers to benefit from the provision of outputs to customers at the lowest cost.

3.7 In respect of drivers and their weights, we welcome the fact that Ofgem has developed its drivers to include MEAV, Maintenance MEAV and customer numbers, and also that the drivers have been weighted according to industry spend.

3.8 We believe that these drivers are broadly reasonable, but have three suggestions for consideration:

- First, we propose that the customer driver to be increased and the Reports workload either eliminated as a Totex driver, or as a minimum recalculated. In particular, we note that the IP proposals give NGGD only [redacted] of industry reports by 2020/21, where over the 11 years from 1999 to 2010/11, we have fallen from 50% of industry Reports to 47.2% in 2010/11 i.e. by around 0.25% p.a. on average. For that relative decline to more than double over the following decade appears unjustified, especially when NGGD has most of the larger cities in the country, which would be expected to have the older gas networks – if anything our rate of deterioration would be expected to be faster.

- Second, in respect of the composition of the MEAV, we propose that the approach adopted for the non operational holders (i.e. 50% inclusion) in the Maintenance MEAV be also adopted for the full MEAV. This is because:
  - Non-operational holders incur costs outside of just Maintenance, in particular in respect of insurance, water and some power costs. Therefore, it is right to make some allowance in the MEAV for non-operational holders for costs other than Maintenance costs.
  - The Maintenance MEAV is a subset of the full MEAV, so it is odd that the full MEAV excludes items included in the full MEAV.
- Third, we have observed a number of anomalies in the rolled forward MEAV data (details of which we have already provided to Ofgem), in particular:
  - [redacted] Network appears to have a negative number of District Governors.
  - [redacted] Network has an apparent increase in the number of NTS offtakes from [redacted] to [redacted] over 4 years, with no description of this in their Plan.
  - Four of the Networks show a significant increase in the length of the second largest mains pipe diameter, but this appears independent of any network growth, or downsizing from the largest diameter band.

Time period of cost assessment

3.9 The IP only carries out cost assessment based on data for 2010/11 and 2013/14.

3.10 This contrasts with the position adopted in the RIIO Handbook, which stated that benchmarking should mainly be in respect of the period of the plan, supported by historic benchmarking.

3.11 Paragraph 8.22 of that document states that: "*As part of our assessment of the quality of a network company's plan we will benchmark the forecast costs to others in the sector where feasible. We will also compare the costs in the plan to historic cost performance although we recognise that, given the changes that network companies are undergoing, these comparisons may need to be treated with caution*."

3.12 Our Plans set out to close NGGD's apparent efficiency gap in 2010/11 in the RIIO plan, and Ofgem data suggests that, if due account is taken of London's Network Specific Factors, we have succeeded.

3.13 Consequently, we are disappointed that Ofgem has decided not to use the 8 year model data due to poorer diagnostics. We understand that this is driven by statistical concerns. However, we believe that the statistical problems have only arisen due to different positions adopted by companies, such as for:

- NGGD's overheads attributed to loss of meterwork;
- NGGD and WWU's Maintenance NRMP increases;
- [redacted] workload assumptions.

3.14 One of the advantages of using benchmarking the 8 year plans was that it would have highlighted the different positions adopted by companies e.g. due to NRMP assumptions, which could then have been investigated by Ofgem and understood after the November Plan, and adjusted for in the benchmarking.

3.15 Our Business Plan set out clear linkages between investment, opex and outputs, and which demonstrated closure of the efficiency gap. The effect of the IP using 2010/11 and 2013/14 for benchmarking largely disregards the vast majority of our Business Plan, and has led to a well justified Business Plan receiving a 15% (pre-IQI) disallowance for cost efficiency.

Additional outputs

3.16 The delivery of outputs desired by stakeholders was a key element of the RIIO programme. These outputs would be expected to vary by company, given the wishes of different groups of stakeholders. Paragraph 8.23 of the RIIO Handbook stated that *"The benchmarking of plans will be based on the total costs of delivering the baseline performance level for primary outputs set in Stage 1 of the review."*

3.17 This implies that there would be some consideration of the extent to which costs would be expected to vary, depending on the level of additional outputs. In the case of NGGD, we included specific costs in our plan to provide a CO monitoring service in excess of that of other Networks, for which no separate benchmarking or allowance has been given.

Internal inconsistency

3.18 One of the consequences of the IP's modelling complexity is internal inconsistency, where costs have been wholly or largely allowed under certain approaches, but disallowed under others. This leaves it very unclear precisely what costs have been allowed in association with what work and outputs.

3.19 Allowing costs under one approach but not another particularly impacts any Network which has a higher than average level of work for which Ofgem have no regression driver, or which has a regression driver, but for which local factors lead to the work having relatively high unit costs. Both circumstances apply to London Network, and partly explain why IP shows it having the highest disallowance of any Network

3.20 Two examples for London Network concern MOBs work and the Medium Pressure mains replacement work, the latter having relatively high unit costs by diameter band due to its location in central London. Both of these have been reviewed and then wholly allowed in the bottom-up analysis for Non-Tier 1 repex, however, because there is no separate allowance made in the totex regressions, both have been largely or wholly benchmarked out.

3.21 A further example which affects all our Networks is in respect of West Midlands' Permali meter box replacement and all our Networks' other customer initiated service replacement. The costs of these have been included in the Totex regression, but with no driver, resulting in apparent inefficiency which is artificial.

3.22 Our proposal is that these costs should be subject to a normalisation adjustment, so that a separate allowance is made, post totex regression, for the additional workload and costs associated with both these types of work – which is the approach Ofgem has adopted for some other atypical costs identified by bottom-up analysis, such as for MOBs surveys

Model instability

3.23 In respect of the stability of the modelling, Ofgem has used three years' panel data (2008/9 to 2010/11) for the 2010/11 models, and two years for the 2013/14 models. However, the Initial Proposals uses only one of each of those years' data to set the Upper Quartile. Using only one year's data makes the location of the Upper Quartile very dependent on the vagaries of a single year's costs, when much more data is available.

3.24 This has a particularly significant impact on the bottom-up approach, but also impacts the totex approach to a lesser degree.

3.25 As we refer to above, we propose that the benchmarking be carried out using the 8 year RIIO-GD1 period data to assess efficiency. In this case, the vagaries of a single year's data are not an issue.

3.26 However, if Ofgem adhere to the IP time periods, we propose that, similar to the use of several years' data for the panel regressions, the cumulative relative efficiency scores of several years' data are used to strike the Upper Quartile.

Insufficient account of Network Specific Factors

3.27 Further account needs to be taken of Network Specific Factors, in particular for repex and opex activities. As invited by Ofgem, we set out, in the Appendix of this document, the most material factors, which are summarised as follows:

- The 'base' repex productivity adjustment arising from factors such as increased pipe depth and additional tipping charges represents 20.3% of labour, as compared to the 15% presently assumed in IP, taken from the bottom of SGN's 15% - 20% range.
- The additional repex network specific factors arising from the large diameter MP work programme in Inner London.
- The Emergency and Repair related factors which logically should be read across from the repex productivity factors described above.

Chapter 4 - Assessment of costs excluded from regression analysis

Question 1: Do you agree with the costs we have excluded from regression analysis and the methodology we have proposed?

Summary of our position

4.1 Although we agree with the costs excluded from the regression analysis, we believe that:

- Maintenance NRMP should also be subject to separate consideration, as Ofgem has proposed for WWU.
- The methodology for Non-Tier 1 repex needs to be corrected, so that the bottom-up allowances for MOBs work and Tier 2 and 3 work are normalised and so added back after the Totex regression - otherwise London's costs in particular are benchmarked out.
- The non-regression benchmarking (which represents 25% of the bottom-up approach) is deeply flawed.
- The complexity of the modelling has led to many errors.
- There are a number of flaws in respect of the treatment of streetworks costs, not least over productivity, where we reference further evidence that backs the assumption of a £37 per metre productivity impact.

Justification of Our Position

4.2 The activities removed from the regression analysis are in respect of:

- Streetworks;
- Smart metering and loss of meterwork;
- Holder decommissioning;
- Land remediation;
- Business Support costs;
- Other Direct costs;
- LTS & Storage capex;
- Replacement governor capex;
- Other capex; and
- Non-Tier 1 repex.

4.3 The first four of these activities are described within Chapter 4 of the Cost Efficiency document, but the others appear to be grouped within "Other adjustments", and their treatment not discussed in that chapter. We assume that Ofgem intended the remaining 6 items listed above to constitute the "Other adjustments", and we include them in our response to this question.

4.4 We would like to restrict our response to this question to higher level methodological issues, rather than a detailed critique of each individual area, to avoid duplication.

4.5 We have identified six higher level points associated with the non–regression methodology.

4.6 First, in respect of the individual items listed in paragraph 1.2, we agree that they should be subject to separate consideration, outside of regression analysis.

4.7 Second, we believe that NRMP maintenance costs, in particular the increase in our costs should have been subject to separate consideration, as Ofgem has proposed for WWU. Many of these constitute an alternative to Asset Integrity capex, which has been removed as a workload adjustment, and so does not affect IQI. In contrast, our increase in NRMP has been largely benchmarked out, both in the bottom-up and Top Down approaches. We describe this issue further in the Maintenance Section of our response in Chapter 6 Question 1.

4.8 Third, it is clear that, due to their scale, the non-regression techniques are very important to the assessment of our plan. The table below shows that 43% of the non-controllable costs in our plan covered by them.

Figure 4.1 – IP Assessment of NGGD Plan

IP assessment of NGGD plan	%
Regression	57
Other benchmarking assessment	25
Non benchmarked assessment	18
	100

4.9 Fourth, we believe that for the 25% of our plan which has been subject to "Other benchmarking assessment", much of the analysis is deeply flawed.

4.10 The only area where a detailed response is not provided in another question is that of Streetworks, where our comments are included as an Annex (para 4.20 onwards) to this to this question. Otherwise our detailed comments can be found as referenced below – references are to the Cost Efficiency chapter unless otherwise stated:

- Streetworks – Uncertainty mechanisms, see Annex;
- Smart metering and loss of meterwork – Chapter 4 Questions 2 & 3;
- Holder decommissioning – Chapter 6 Question 1 (Holder Demolition);
- Land remediation – Chapter 6 Question 1 (Land (Statutory) Remediation);
- Business Support costs – Chapter 6 Question 1 (Business Support Activities);
- Other Direct costs – Chapter 6 Question 1 (Other Direct Activities);
- LTS & Storage capex – Chapter 7 Question 1;
- Replacement governor capex – Chapter 7 Question 1;
- Other capex – Chapter 7 Question 1 and
- Non-Tier 1 repex – Chapter 8 Question 3 but also see below.

4.11 Fifth, there are two serious methodological inconsistencies for Non-Tier 1 capex. These costs are especially material for London Network, both for MOBs risers work, Medium Pressure Inner London replacement, and Permali meter box and other customer initiated service replacement.

4.12 Methodological inconsistency A) is for costs, which having been considered separately, have been allowed in the bottom-up assessment. However, they have not been explicitly allowed in the Totex regression, consequently:

- For the MOBs risers, for which there is no Totex regression driver, there is no allowance at all.
- For the Medium Pressure work, which has relatively high unit costs for its diameter given its location, the additional costs are, in effect, benchmarked out.
- For the Permali meter box and customer driven other services replacement, the costs are included in the Totex regression, but there is no driver.

4.13 The result is that these costs are in effect 50% allowed – being allowed in the bottom-up analysis but disallowed in the Totex regressions.

4.14 We propose that the efficient level of Non-Tier 1 repex costs from the bottom-up assessment should be subject to the usual normalisation treatment and added back to the Totex regression outcome.

4.15 Methodological inconsistency B) is for the West Midlands' Permali meter box replacement and all our Networks' other customer initiated service replacement, the costs of which have been included in the Totex regression, but with no driver, resulting in apparent inefficiency which is artificial.

4.16 Sixth, quite apart from the principle of the items excluded from regression analysis, we are concerned over the extent of the problems Ofgem has acknowledged over their practical application.

4.17 While we believe that the modelling of normalisations has been generally carried out effectively, we note that the size, complexity and opacity of the modelling, has led to Ofgem and the companies identifying a large number of errors, which creates a degree of uncertainty in our response.

4.18 Examples of the errors from Ofgem's error log are shown below:

- Error number 25: Opex: East of England's Xoserve allowances of £7m p.a. were omitted from the aggregated allowances for the top down historical and 2yr models.
- Error number 22: Capex: an inaccurate efficiency savings factor has been applied to capex-connections historical costs. Similarly, an inaccurate factor has been applied to capex-mains 2yr.

4.19 We also note that there has been no liaison as yet with the companies on the matters included within Ofgem's Issues log (which contains more problematic issues rather than clear errors).

ANNEX

Streetworks efficiency

4.20 We do not agree with the amendments made to our business plan streetworks allowances proposed by Ofgem in IP. Our business plan included all Streetworks costs for enacted Streetworks legislation such as Fixed Penalty Notices, the increase in S74 overstay charges and the introduction of Permit Schemes that would be in place prior to April 2013. It is therefore reasonable to allow a level for those costs from the start of RIIO-GD1 and we cover each of these in the following sections.

Fixed Penalty Notice charge allowances

4.21 For Fixed Penalty notices, Ofgem have limited the cost driver to a ratio of penalties to permits where our plans explained clearly that FPNs apply to any NRSWA notices including permits. We included the volumes of notices in our narrative to allow Ofgem to assess the efficient level of FPNs in our plan. Since the IP we have restated our position on this with Ofgem and will be in discussion with them to ensure FPN adjustments are assessed on the correct cost driver and are therefore included in our allowances rather than moved into the uncertainty mechanism.

S74 overstay charge increases

4.22 Our business plan included the additional costs that would be driven by the increase in S74 charges proposed from the 1 October 2012. It has since been confirmed by the DfT that these charges will be increased from the 1 October 2012.

4.23 Following IPs, Ofgem have requested additional information to assess the impact these charge increases will have to networks and we have provided this information.

4.24 It should be noted that networks already incur S74 charges on our works and we are requesting only the additional costs to fund the increase in charges from October 2012. Our current S74 overstay charges represent circa 3% of our work stop notices and it recognised across utilities that this represents a high level of compliance.

4.25 With the quality of our business plan data, plus the information requested by Ofgem, we see no reason to log up costs until an uncertainty mechanism reopener window and incur additional financing costs for customers to fund the log up of these costs even on an NPV neutral basis. In addition, if some networks cannot provide the data Ofgem have requested to make an upfront assessment, we suggest that individual networks should log up rather than disadvantage those customers in networks where there is the ability to identify cost impacts. The table below includes the costs that we have included in our April business plan for S74.

Figure 4.2 – S74 Charges

S74 Charges (From data Tables £m)

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
EE	2.657	2.640	2.607	2.574	2.540	2.492	2.439	2.378	20.328
LO	6.837	6.905	7.031	6.993	6.976	6.828	6.780	6.713	55.064
NW	1.372	1.356	1.338	1.315	1.288	1.254	1.214	1.171	10.309
WM	1.183	1.267	1.301	0.894	0.875	0.854	0.831	0.807	8.012

4.26 The table above totals £94m, which represents around £12m p.a. over the RIIO-GD1 period.

Permit Scheme administration costs

4.27 For additional administration costs driven by permit schemes, we have concern over Ofgem's methodology to use project numbers (an internal GDN driver) instead of permit volumes (an external driver) to determine the level of administration costs. From a reporting point of view, should networks change their average total project length driven by the change in the 3 Tier iron mains replacement a cost per permit would allow easier assessment of cost and comparison in the future. This change would have no impact on cost allowances.

London Productivity Impact

4.28 Our view remains that the streetworks productivity impact in London will reflect an average of £37/m p.a. As indicated in our April business plan, we have been analysing a sample of projects within and outside central London boroughs to identify the specific costs in managing streetworks once a permit scheme has been introduced. The exercise has now been completed and we have provided this data to Ofgem. The results from the sample supports our original top down assessment of costs as part of our Income Adjustment Event submission in October 2011 that the additional productivity impact in London for streetworks is at least £37/m p.a.

4.29 In addition to this sample, we have provided the following arguments that further substantiate the challenges in delivering services to customers in London. These can be summarised as follows and with reference to the table below:

- Population Density – There is a significant correlation between population density and the additional costs we have identified to operate under permit schemes. Locations with population densities of over 10,000 people per square kilometre align with our GDPCR1 IAE submission of £78/m p.a. productivity and other costs. For comparison [redacted] IAE submission, which included Wandsworth, has a population density of 8,500 people per square kilometre.

- Road Type Mix – Using national available information we can demonstrate that the percentage of Road Types 1 to 3 in London is at least three times greater than the national average. This mix can have a significant impact in the both the underlying duration of our works and traffic complexities, which are magnified when adding in the requirement to manage within Permit Conditions.

- Permit Scheme operation – The above elements have resulted in the introduction of the London Permit Scheme (LoPS), including TfL managing a permit scheme for strategic routes across the London HAs. This situation is unique in that no other body in England operates across Highway Authorities in the same way as TfL (81% of TfLs road network is Type 1 roads).

Figure 4.3 – Highway Authority details

Highway Authority	Population 000s People per km^2	Type 1 to 3 Roads	Type 4 Roads	IAE Cost (£) / metre	Average cost (£) per metre submitted in October 2011
Islington	13.0	86%	14%	£19.80	
Hackney	11.5	71%	29%	£42.03	
City of London	3.9	51%	49%	£111.45	
Westminster	12.0	29%	71%	£221.76	£78
Kensington and Chelsea	14.1	21%	79%	£65.16	
Hammersmith & Fulham	10.6	20%	80%	£107.45	
Camden	10.7	16%	84%	£87.60	
Haringey	7.5	36%	64%	£10.58	
Ealing	5.7	34%	66%	£14.21	
Barnet	4.0	31%	69%	£0.25	£15
Brent	6.0	29%	71%	£54.74	
Redbridge	4.8	23%	77%	£476.84	
Hounslow	4.2	45%	55%	£1.85	£2

4.30 This represents an adjustment of around £3m p.a. over the RIIO-GD1 period.

4.31 **On the basis of our additional evidence provided to Ofgem and the key London factors identified above we believe the London Streetworks cost allowance should reflect a productivity impact of £37/m as submitted in our April business plan.**

Question 2: Do you agree with our proposals for smart metering?

Summary of Our Position

4.32 Ofgem's proposals for Smart metering have merit in allowing start-up costs in the core cost allowance with the individual costs of smart meter installations impact on our Emergency, and possibly other, activities covered by an Uncertainty Mechanism. Our views on the uncertainty mechanism are set out in Chapter 3 Question 18 of our response document.

4.33 The basis of the cost allowance for Smart Metering, as set out in the Initial Proposals, is to provide a 'one-off' allowance in the first year of the programme of £0.30 per smart meter forecasted to be installed during the RIIO period.

4.34 We agree with the process that scales other companies ( ) installation forecasts down to 2020/21 customer numbers as we do not see how they can have more smart installations.

4.35 We do however disagree with the calculation of the number of meter installations. These are because:

- it relies on the forecast of smart meter installations provided by each DN, which are shown to be erroneous in some cases.
- it is unfairly affected by the phasing of the installation programme, not recognising pre-2013 installations in the given allowance.

4.36 **It is our recommendation that Ofgem base the Smart one-off allowance on the 2021 forecast of customer numbers for all networks and irrespective of the different phasing assumptions made by networks.**

Justification of Our Position

4.37 The methodology employed by Ofgem in their model relies on an appropriate forecast of smart meter installations to be provided by each DN. However, this is clearly not the case as some DNs provided a forecast of smart meter installations that is greater than the number of customers in 2020/21

4.38 In these cases, Ofgem based the allowance on the 2021 forecast of customer numbers, the logic being as follows:-

- If 'smart installations' is less than 'customers in 2021' then use 'smart installations'
- If 'smart installations' is greater than 'customers in 2021' then use 'customers in 2021'

4.39 Whilst an acceptable substitution, it works on the assumption that all of the installations will be carried out within the RIIO period.

4.40 However, in our forecast of smart meter installations, we estimated that 723,600 meters would have been installed before 2013/14. These meters should be included in the calculation of the Smart Meter Allowance if the set-up costs are to be proportioned according to the scale of the programme. This error is detailed in our Error Log – ref GD1-NGGPh4-14, (we recognise that this has now been corrected by Ofgem).

4.41 In addition, there is an error in the WM customer numbers used in Ofgem's model file 'Smart metering and loss of meterwork'. (This error is detailed in our Error Log – GD1-NGGPh4-15, we recognise that it has now been corrected by Ofgem). Ofgem's model uses a value of 1,947,469, whereas our submitted plan stated 2,003,233 for WM customer numbers in 2012. The correct customer numbers should be used when calculating the allowance. (This error is detailed in our Error Log – ref no GD1-NGGPh4-15, we recognise that it has now been corrected by Ofgem).

4.42 We propose that the corrected allowance for NGGD should be £217k higher than stated in the initial proposal, as shown below:

Figure 4.4 – Proposed Allowance revision

RIIO Total £m	**EE**	**LN**	**NW**	**WM**	**NGG**
Number of Smart Installations	3,809,933	2,176,468	2,562,411	1,868,833	**10,417,644**
Customer Numbers (as in Ofgem Model)	4,075,844	2,316,470	2,745,697	1,947,469	**11,085,480**
Customer Numbers (as in RIIO data tables)	4,075,844	2,316,470	2,745,697	2,003,233	**11,141,244**
Additional Installations	265,911	140,002	183,286	134,401	**723,600**
Additional Allowance	**£ 0.080**	**£ 0.042**	**£ 0.055**	**£ 0.040**	**£ 0.217**

4.43 Although only a small amount, it highlights the inconsistency and lack of fairness of Ofgem's approach and should be corrected for good practice. Also all the small items add up to a material value.

Question 3: Do you agree with our proposals for loss of meterwork?

Summary of Our Position

4.44 Ofgem's proposal for Loss of Meterwork (LoM) allowance is based on a view that NGN have managed their stranded costs right down to £0.9m p.a. by 10/11.

4.45 We believe that Ofgem should be cautious in relying on the reported performance of a single company, NGN, which has failed to achieve its Emergency standard in two of the years post Network Sales, one being 2010/11.

4.46 It is not true to say that NGN's stranded cost is only £0.9m p.a. NGN have also included, in their plan, a £3.1m marginal increase in Repex costs due to the use of stranded direct labour (FCO) instead of contractors. (Ref – NGN Business Plan, Appendix 18: Regional Factors – Table 1).

4.47 When setting the allowances for LoM, the Initial Proposal has not replicated this Repex increase across the companies. Ofgem have clearly cherry-picked NGN's plan, delivering an unrealistic cut of allowance to all other networks and leaving our organisation at high risk of being unable to achieve the necessary standards of safety and reliability within our Emergency activity.

4.48 The Initial Proposals do not carry out basic sense-checks against historical revenue drivers, wherein it can be shown that LoM allowances given to NGGD in GDPCR1 are far higher than the allowance stated in the Initial Proposal. (IP = £3.9m p.a. GDPCR1 = £18.3m p.a.). Adding in the proportional increase in Repex for NGGD would bring our allowance to £17.4m p.a. which is far more realistic in relation to the GDPCR1 revenue driver.

4.49 The proposed allowances do not consider the impact of loss of meterwork on overhead costs falling back into the Opex work management and business support activities. NGGD are the only company to have fully modelled these impacts within their business plan and these costs should be factored in to benchmarking normalisations and resultant allowances.

Justification of Our Position

4.50 We believe that Ofgem should be cautious in relying on the reported performance of a single company, NGN, which has failed to achieve its Emergency standard in two of the years post Network Sales, one being 2010/11.

4.51 It is stated in NGN's Business Plan that over a period of two years (from 2008/09 to 2010/11) they managed their Opex stranded costs down from £3.4m to £0.9m. They also detail an associated marginal increase in Repex costs up to £3.1m in 2010/11. These incremental costs are associated with the cost of using direct labour (FCO) compared to contractors.

4.52 These details are laid out in their Regional Factors document - Appendix 18. They state clearly that a 'key part of NGN's strategy to mitigate the impact of LoM has been to redeploy FCO downtime into repex activties'. It is clear from the numerous references to discussions with Ofgem, that Ofgem have both been aware of and supported this strategy.

4.53 The relevant cost provisions both in Opex (£0.9m p.a.) and Repex (£3.1m p.a.) have been allowed for NGN. It is a clear case of cherry-picking that the allowances for LoM expect all other DNs to reduce their Opex costs to an equivalent level to NGN (£0.9m p.a.) whereas they do not include any equivalent allowance for any marginal increase in Repex.

4.54 A simple estimation of an equivalent marginal increase in Repex costs for NGGD results in an increase of £13.5m p.a. for our LoM Allowance as shown in the calculations below. The £3.1m of Repex costs are pro-rated across DNs using customer numbers to scale, in the same manner used by Ofgem to calculate the Opex allowance, to produce a total of £17.4m.

Figure 4.5 – Proposal for Revised LoM Allowance

	Full cost impact on LoM as detailed in plan	Pro-rata impact on NGGD (using customer number)				
	NGN	**EE**	**LN**	**NW**	**WM**	**NGGD**
Customer numbers 2010-11	2,500,000	3,960,109	2,281,401	2,673,349	1,950,527	10,865,386
Bench mark unit cost	£0.36					
LoM using Customer numbers	£0.9	£1.4	£0.8	£1.0	£0.7	£3.9
Impact on Repex pro-rata	£3.1	£4.9	£2.8	£3.3	£2.4	£13.5
Total Revised Allowance	**£4.0**	**£6.3**	**£3.7**	**£4.3**	**£3.1**	**£17.4**

4.55 This results in a revised allowance of £17.4m p.a. for NGGD which, when compared to the Loss of Meterwork revenue driver for NGGD in GDPCR1 of £18.3m p.a. gives evidence to the fact that inclusion of this additional Repex allowance is the realistic and fair approach to management of stranded LoM costs.

Figure 4.6 – GDPCR1 Loss of Meterwork Revenue Driver

GDPCR1	EE	LN	NW	WM	NGG
LoM Revenue Driver £m	7.00	4.15	2.74	4.42	**18.30**

4.56 There is no allowance given for loss of meterwork overhead costs falling back into Opex in relation to Work Management and Business Support activities. NGGD were the only company to identify the real impact of such cost increases and as such they have been benchmarked out of our plans rather than being included in the relevant evaluation of allowances. The impact of this cost increase was also raised and recognised when setting the allowances for GDPCR1, although no allowance was actually given. Ofgem have not considered this impact within their allowance despite the additional evidence in RIIO plans and the relative impact from benchmarking.

Figure 4.7 – GDPCR1 Non-formula (Loss of Meterwork) overhead reduction

£m	**Reduction from 11/12 to 20/21**
EE	-1.8
LN	-1.2
NW	-1.3
WM	-1.0
NGG	**-5.3**

Chapter 5 - Overview of bottom-up assessment

Question 1: Do you consider our approach to bottom-up assessment is appropriate, and if not what changes would you propose?

Summary of our position

5.1 The purpose of bottom-up benchmarking is to better understand cost drivers and network specific factors.

5.2 We do not consider the approach to bottom-up cost assessment in the IP appropriate, and set out below the areas which need to be addressed, with suggestions as to how it could be improved.

- We broadly support the regression drivers used, although we urge Ofgem to review its network deterioration assumptions.
- We are disappointed that the 8 year plan data is not benchmarked, only that for 2010/11 and 2013/14. Only by using the 8 years' data can the plans be fully understood.
- The additional outputs we were encouraged by our stakeholders to provide, such as CO monitoring have either received no or very limited cost assessment.
- The modelling is unstable in that it uses one year's data to determine Upper Quartiles.
- The technical assessments, which were carried out on 25% of our Plan, were deeply flawed.
- The approach takes insufficient account of Network Specific Factors.
- Re-opening the present price control to claw-back apprentice and training costs weakens the regulatory regime, contradicts Ofgem's RIIO commitments, and has also been applied asymmetrically.

Justification of Our Position

5.3 Before commenting on the IP bottom-up approach, it is helpful to summarise it first. The IP's bottom-up approaches are a mixture of activity regressions and technical assessment of cost areas such as IS. The regressions are based on a number of years of panel data but use two years' specific data, 2010/11 and 2013/14, to give average cost line equations.

5.4 For each year of the RIIO period, driver information is fed into these equations to give average cost allowances, to which an Upper Quartile adjustment is made, based on the relative efficiency of each Network across all the activity regressions for a single year, either 2010/11 or 2013/14.

5.5 The justification for our position is set out in a number of sections below:

- Regression drivers
- Time period of cost assessment
- Additional outputs
- Model instability
- Technical assessments
- Insufficient account of Network Specific Factors.
- Apprentices & Training

5.6 We expand on these arguments below.

Regression drivers

5.7 The purpose of bottom-up benchmarking is to better understand cost drivers and network specific factors.

5.8 In respect of the individual approaches, we welcome the fact that Ofgem has developed its drivers for the Emergency and Maintenance regressions. Although we do not believe that the driver for Maintenance regression is very robust, we have not been able to identify any better alternative. That apart, we believe that the other drivers, together with those for Tier 1 Repex and Repair are broadly reasonable.

5.9 However there are two particular areas where we have proposals:

- The change in Reports numbers is not reasonable and we urge Ofgem to revisit its deterioration assumptions. The IP proposals give NGGD only [redacted] of industry Reports by 2020/21, where over the 11 years from 1999 to 2010/11, we have fallen from 50% of industry Reports to 47.2% in 2010/11 i.e. by around 0.25% p.a. on average. For that relative decline to more than double over the following decade appears unjustified, especially when NGGD has most of the larger cities in the country, which would be expected to have the older gas networks – if anything our rate of deterioration would be expected to be faster.

- We have observed a number of anomalies in the rolled forward Maintenance MEAV data (details of which we have already provided to Ofgem), in particular:
  - [redacted] Network appears to have a negative number of District Governors.
  - [redacted] Network has an apparent increase in the number of NTS offtakes from [redacted] to [redacted], with no description of this in their Plan.

Time period of cost assessment

5.10 The IP only carries out cost assessment based on data for 2010/11 and 2013/14.

5.11 This contrasts with the position adopted in the RIIO Handbook, which stated that benchmarking should mainly be in respect of the period of the plan, supported by historic benchmarking.

5.12 Paragraph 8.22 of that document states that: *"As part of our assessment of the quality of a network company's plan we will benchmark the forecast costs to others in the sector where feasible. We will also compare the costs in the plan to historic cost performance although we recognise that, given the changes that network companies are undergoing, these comparisons may need to be treated with caution."*

5.13 Our Plans set out to close NGGD's apparent efficiency gap in 2010/11 in the RIIO plan, and Ofgem data suggests that, if due account is taken of London's Network Specific Factors, we have succeeded.

5.14 Consequently, we are disappointed that Ofgem has decided not to use the 8 year model data due to poorer diagnostics. We understand that this is driven by statistical concerns. However, we believe that the statistical problems have only arisen due to:

- The poor plans of some of the other companies; and
- The different positions adopted by companies, such as for:
  - NGGD's overheads attributed to loss of meterwork;
  - NGGD and WWU's Maintenance NRMP increases;
  - [redacted] workload assumptions.

5.15 One of the advantages of using benchmarking the 8 year plans was that it would have highlighted the different positions adopted by companies e.g. due to NRMP assumptions, which could then have been investigated by Ofgem and understood after the November Plan, and adjusted for in the benchmarking.

5.16 Our Business Plan set out clear linkages between investment, opex and outputs, and which demonstrated closure of the efficiency gap. The effect of the IP using 2010/11 and 2013/14 for benchmarking largely disregards the vast majority of our Business Plan, and has led to a well justified Business Plan receiving a 15% (pre-IQI) disallowance for cost efficiency.

Additional outputs

5.17 Third, the delivery of outputs desired by stakeholders was a key element of the RIIO programme. These outputs would be expected to vary by company, given the wishes of different groups of stakeholders. Paragraph 8.23 of the RIIO Handbook stated that *"The benchmarking of plans will be based on the total costs of delivering the baseline performance level for primary outputs set in Stage 1 of the review."*

5.18 This implies that there would be some consideration of the extent to which costs would be expected to vary, depending on the level of additional outputs. In the case of NGGD, we included specific costs in our plan to provide a CO monitoring service in excess of that of other Networks, for which no separate benchmarking or allowance has been given.

Model instability

5.19 In respect of the stability of the modelling, Ofgem has used three years' panel data (2008/9 to 2010/11) for the 2010/11 models, and two years for the 2013/14 models. However, the IP uses only one of each of those years' data to set the Upper Quartile. Using only one year's data makes the location of the Upper Quartile very dependent on the vagaries of a single year's costs, when much more data is available.

5.20 This has a particularly significant impact on the bottom-up approach, where, for example, IP modelling has the Upper Quartile at 93% of the average in 2008/9, but 96% in the following year. The first year has twice the catch-up efficiency challenge of the second – which cannot credibly be due to relative efficiency, but variability in the cost and activity data, imperfect knowledge of drivers and network specific factors etc.

5.21 As we refer to above, we propose that the benchmarking be carried out using the 8 year RIIO-GD1 period data to assess efficiency. In this case, the vagaries of a single year's data are not an issue.

5.22 However, if Ofgem adhere to the IP time periods, we propose that, similar to the use of several years' data for the panel regressions, the cumulative relative efficiency scores of several years' data are used to strike the Upper Quartile.

Technical assessments

5.23 The Technical Assessments are key as they were carried out on 25% of the controllable costs in our April Business Plan.

5.24 Unfortunately, many of them are deeply flawed. We describe fully the weaknesses found in our responses to the later, lower level questions raised in

this chapter, but we have identified logic errors, cherry-picking and inconsistency with Ofgem policy after Network Sales.

5.25 Examples of the logic errors include:

- IS Capex - where a consultant has proposed a £12m pa cut (with no evidence provided), which results in an allowance for NGGD that is less that for despite NGGD having the number of networks.
- Environment - where despite having lower planned expenditure than the IP has misunderstood our information and disallowed NGGD's expenditure alone, resulting in an allowance below our historic spend whilst allowing other companies all their planned spend.
- Business Support - where the IP uses an external benchmark to set an Upper Quartile allowance on individual activities, with no checks for industry/international influences.
- Apprentices – where the IP sets a disallowance for the least cost per recruit business plan (NGGD), whilst rewarding another network

5.26 Examples of cherry-picking are:

- IS Capex - where NGGD's strategy of higher reliance on IT to provide lower direct costs results leads to our IS capex being benchmarked out, but the consequential lower opex drives the Upper Quartile.
- Business Services – which cherry-picks the lower of an external benchmark or the Network benchmark, despite the external advisors stating in their report not to

5.27 In addition, for IS capex the technical assessment has led to a result contradictory to previous regulatory decisions, where at Network Sale and re-affirmed[5] in GDPCR1 Ofgem stated that there would be no additional cost for IDN customers as compared to NGGD customers due to loss of economies of scale. The approach adopted systematically assumes that NGGD's Networks should have lower IS costs than those of the iDNs. Following this logic Network Sales should not have happened as it would have been expected to increase costs to customers.

Insufficient account of network specific factors

5.28 Further account needs to be taken of network specific factors, in particular for repex and opex activities. As invited by Ofgem, we set out, in the Appendix of this document, the most material factors, which are summarised as follows:

[5] Ofgem – National Grid Transco Potential Sale of Gas Distribution Network Businesses Final Impact Assessment (ref 255/04a) P115 paragraph 8.47 & Appendix 6 p45 & 46
GDPCR One Year Control Final Proposals – Dec 06 (ref205/06) p46 paragraph 1.34

- The 'base' repex productivity adjustment arising from factors such as increased pipe depth and additional tipping charges represents 20.3% of labour, as compared to the 15% presently assumed in IP, taken from the bottom of SGN's 15% - 20% range. Our detailed assessment of network specific factors is supported by the fact that Ofgem's sparsity data shows that London Network's areas of Inner and Outer London are 20% more densely populated than those of SGN.

- The additional repex network specific factors arising from the large diameter MP work programme in Inner London.

- The Emergency and Repair related factors which logically should be read across from the repex productivity factors described above. Given that Ofgem recognises the productivity impacts of London working for repex, because Repair in particular is a very similar physical activity, it is difficult to understand why a similar adjustment has not also been made for Repair. The Initial Proposals actually assumes, due to its sparsity adjustment, that London is an easier network to work in than any other.

Clawback of Apprentice and Training costs

5.29 A further feature of IP with which we disagree is the proposed claw-back of any under-spend in the present price control period on Apprentices and Training. We oppose this on three grounds:

- It represents retrospective regulation, an effective re-opening of the GDPCR1 price control outcome, which only acts to increase regulatory uncertainty, and so add to the cost of capital.

- Retrospective regulation is a breach of the commitments made by Ofgem in the RIIO Handbook. Paragraph 5.6. states that "*Network company decisions will be influenced by their perceptions of the credibility of the regulatory framework. The RIIO model is designed to provide certainty and transparency about how the framework will work in the future. As part of this, we will seek to avoid any retrospective/ex post adjustments to the package agreed in final proposals and licence modifications as this could undermine regulatory commitment*."

- It is asymmetric - NGGD overspent significantly on Training and Apprentices from 2004/5 to 2007/8 compared to price control allowances, and has received no credit for this at all. We received zero allowance for Apprentices and Training from 2001/2 to 2007/8 inclusive, and yet recruited over 100 people in each of 2004/5, 2005/6 and 2006/7, and 150 in 2007/8. Although we have not received additional allowances ex post, we did not expect to receive any as this would have represented re-opening the price control.

Combining with Totex results

5.30 The use to which the bottom-up approaches are put in arriving at the overall allowances is not addressed here but rather in our answer to question 1 above.

Chapter 6 - Operating expenditure

Question 1: Do you agree with the assessment we have carried out and the results proposed for opex?

Overview of our Position

6.1 NGGD do not agree with the assessment carried out for opex, there being many arithmetic errors, flaws in logic and inconsistency of approach to setting allowances that drives in an inherent cherrypicking effect.

6.2 NGGD's has significant issues with the majority of the bottom-up activity based assessment, be they be regression based, other benchmarking or individual technical assessments. These issues give rise to what NGGD view as an unacceptable level of opex allowed in order to fulfil our safety and security of supply obligations and outputs.

6.3 Within the modelling of activities, we note a number of areas where inconsistencies of approach and poor logic have led to a cherrypicking effect. We also note some examples of poor technical assessments and basic arithmetic/logic errors, that total over £75m p.a. unjustified cut in allowances from our submitted plan.

6.4 The key areas of concern and our main areas we seek adjustment to the allowances are:

- **Loss of Meterwork (c.£13m p.a. lower than plan)** – Ofgem's approach of setting the Loss of Meterwork allowance is based on NGN's management of Opex costs alone, disregarding the associated marginal increase in Repex. Basic sense-checks against historical revenue drivers could have identified the unrealistically low level of this allowance and the resultant risk to the emergency standards of service if this allowance goes unaltered.

- **Deterioration Rates (c.£5m p.a. lower than plan)** - have been revised by Ofgem based on a unique and inconsistent approach. The approach does not recognise the impact of inconsistent historical data reporting and the comparative impact of the use of different starting points for the trend. This is a cost assessment adjustment so it is also wrong not to reward the frontier network (EoE) as to use the current approach also rewards poor performers.

- **Maintenance (c.£10m p.a. lower than plan)** – Ofgem's methodology has a default impact of disallowing over 80% of the increase in the level of expenditure associated with non routine maintenance. The historic & future models applied by Ofgem result in a default 50% allowance of the increase to the start of the price control and more importantly the exclusion of any review of the long term requirements result in a complete disallowance of further cost

increases. This increase is directly offset by significant reduction in capital expenditure and is part of our holistic asset integrity strategy. It is particularly disconcerting in that the increase is driven by new technology, funded by IFI that enhance our capabilities to further improve our totex decision making. In addition to this the maintenance benchmarking is not robust and there are also many examples of inconsistent categorisation of costs that have impact on proposed allowances.

- **Training & Apprentices – (c.£8m p.a. lower than plan)** – there are numerous errors associated with the modelling of these allowances, leading to an entirely unjustified cut in allowed costs. This includes errors that disallow apprentice numbers (despite stating their fundamental agreement with our workforce renewal requirement) and a methodology that ignores NGGD's least cost per recruit training programme that penalises NGGD, whilst giving [redacted] with higher allowances than their plan despite having a higher cost per recruit. In addition NGGD would assert the clawback for under spend during current period on both principle (breach of commitments made in the RIIO Handbook), but also an asymmetric claw-back of under-recruitment given NGGD over-recruited the previous control period.

- **Business Support – (c.£15m lower than plan)** – has been set on an external upper quartile (UQ) benchmark for which no tests of industry comparability have been evidenced, that drive unobtainable allowances for these activities (a 23% efficiency cut across all companies) despite benefits made in this area from start up companies at time of network sale. It is also against the advice of the Ofgem's own consultants and clear example 'cherry-picking' in the underlying results, an effect of bottom-up benchmarking that was accepted and corrected for in GDPCR1.

- **Land Remediation – (£4.4m p.a. lower than plan)** – In setting this allowance, Ofgem have not taken a miss-understanding of the data table classification of holder and non-holder environmental costs submitted by NGGD. As a result most of our environmental spend requirements are disallowed, whilst [redacted] networks, [redacted] and submitted higher cost plans in this area have their plans allowed in full.

- **Errors and Cherry-picking – (c.£6m p.a.)** - within the modelling, including examples of cherry-picking between Other Direct Activity and the work management and maintenance activities given classification differences that drive further unjustified disallowances.

6.5 In addition there are the adjustments we believe should be made in the disallowances on **RPE, Ongoing Efficiency, and Regional Factors (c£15m p.a.),** which are articulated and evidenced in our answers to Questions 1 and 2 of Chapter 2.

6.6 The rest of this section provides greater detail and justification for NGGD's position.

Work Management

(Appendix 2, para 1.2 – 1.5, Table A2.1)

6.7 This evaluation of work management costs excludes any consideration of Holder Demolition and Environmental costs. Our response to these allowances are detailed in later sections on this question's response.

6.8 In considering the pure work management costs, we recognise that our share of costs is reducing as a result of the MEAV regression driver, but note that our allowance is an 8% reduction on planned cost.

Figure 6.1 - Work Management Costs (Average Annual)

£m pa	Plans[(i)]	IP[(ii)]	Change			
NGGD	69.5	63.7	-5.8	-8%	**% NGGD share of total**	
NGN	16.0	14.9	-1.2	-7%	09-11	51%
SGN	35.0	34.8	-0.1	0%	plan	50%
WWU	17.3	16.5	-0.8	-5%	ip	49%
	137.8	**129.9**				

(i) after adjusting for holder dem, env and uncertainty

(ii) before inclusion of HD & Env allowance and reconcilliation to final allowances

6.9 We would assert that at least £1.5m p.a. of the disallowance in the IP is unfair due to differences in classification as follows.

- NGGD included £1.5m p.a. associated with organisational changes implemented within NGGD to be enable us to manage the increased complexity of RIIO. These form part of our Customer Management costs as detailed in our November plan[6].
- [redacted] included an item called "Costs of RIIO' in their Other Direct Activity which has been allowed at £[redacted] m p.a.
- But for NGGD the similar cost has been benchmarked out, given our costs in Work Management are higher than the other companies

6.10 This is another example of unfair treatment resulting from differing classification of costs – a classic cherry-picking example, with NGGD being disadvantaged by c.£[redacted] m p.a. (£[redacted] m *4)

6.11 It could be higher, if more of the lower NGGD ODA costs are due to us classifying costs into work management for other small items compared to the other companies.

6.12 Finally, there is a minor point of error which has already been reported to Ofgem in our error log (reference number GD1-NGGPh4-32), although it is unclear from the response if it has been actioned. The London model incorrectly used a value of £0.21m p.a. for environmental costs instead of £0.06m p.a. although a minor impact it should be rectified.

[6] Chapter 9 – Our Work Delivery Expenditure – Section 8 Paragraph 8.19

Emergency

(Appendix 2, para 1.5 - 1.11, Table A2.2)

Summary of our Position

6.13 The core emergency allowance requires some development to include:

- A Network Specific Factor to be applied to reflect the additional operational difficulties associated with London working as evidenced in our business plans – otherwise London is assumed to be the easiest operational environment in the country,
- An appropriate revision to the deterioration rate of mains and services to be based on consistent data from networks, and
- Adjustment to the driver data in respect of customer numbers for three Networks.

6.14 Of most significance however is the correction of the loss of meterwork adjustment which, in the Initial Proposal, is approximately a quarter of the value implied by the experience evidenced by NGN and that determined by Ofgem in GDPCR1.

6.15 Without our proposed corrections we will have to review our ability to deliver our planned outputs commitment to visit 2.1 million homes to provide a CO advice service, as we are not being given the funding to enable this.

6.16 **We would ask Ofgem to revise the IP for the more appropriate level of external reports, correct the errors with regards to Loss of Meterwork and customer numbers, and apply a Network Specific Factor reflecting the difficulties of operating in London.**

Justification of Our Position

6.17 Given the wide range of assumptions built into the different network business plans in this activity of the uncertain areas of Loss of Meterwork and the introduction of Smart meters, Ofgem's development in data tables in the April plan has enabled the structured assessment of the issues of underlying emergency, loss of meterwork and the introduction of smart metering.

6.18 NGGD however have identified three areas that need appropriate adjustments in the Final Proposals, namely:

- Cuts to our core emergency forecast with regard to the London regional factor assessment and the impact of the report deterioration assessment,
- Loss of meterwork allowance, which is based on NGN experience but ignores the stranded costs that has been experienced in repex, and
- The impact on our output commitment on CO.

Core Emergency Service & London Regional Factor

6.19 In recent years we have struggled to meet the critical standards of service and so have increased our expenditure by 8% in 2011/12 in order to have sufficient resources on standby to provide the set emergency standards of service if extreme cold weather is experienced. Our plan however took this revised baseline and then included a step change in our emergency activity efficiency following the implementation of our new suite of computer systems that will enable a transformed operation.

6.20 We were therefore not surprised to see our ranking improve and be 1, 2, 3 and 6 in the forecast benchmarking for 2013/14 and 2014/15[7].

6.21 The result of Ofgem's RPE/ongoing efficiency assumptions (see response in Chapter2 Question 2) and regression benchmarking methodology however results in an overall disallowance of 6% on our plan, with North West network having the most significant cut.

Figure 6.1 – Emergency Allowances (average annual)

£m pa	Plan (i)	IP(ii)	% Change
EoE	13.1	13.0	-1%
Lon	9.1	8.6	-6%
NW	10.0	8.3	-17%
WM	6.9	6.7	-3%
NGN	9.8	9.4	-4%
Sc	8.3	6.9	-17%
So	18.5	14.7	-21%
WWU	9.4	9.7	3%
	85.1	**77.2**	**-9%**

%NGGD share of total	
Plan Fcts	**46%**
IP	**47%**
CSV	

(i) normalised submitted costs less submitted Loss of Metering forecasts
(ii) IP before reconciliation to final allowances & Loss of meterwork stranding allowance

[7] RIIO-GD1: Initial Proposals – Supporting Document – Cost Efficiency – Section 5 – Table 5.1

6.22 The level of cut in North West is concerning, given the necessity to achieve standards of service on the emergency service, but we accept this is a reflection of the sparsity factor that Ofgem have developed, with North West being quite urban based. As such although being slightly larger than NGN, the known sparsity effect creates this lower allowance.

6.23 We do however challenge the application of the sparsity effect to the London Network, which implies that London has the easiest operating environment in the country for Emergency, which cannot be correct.

- We accept that a sparsity adjustment should be made to reflect the higher Emergency productivity possible in more urban environment (as opposed to the spurious grounds of shorter travel times); but

- No adjustment is made to reflect the particular difficulties of operating in London, accepted by Ofgem for repex, and accepted by Ofgem at GDPCR1 for Emergency and Repair. We identified a cost of £1.0m associated with additional job time compared to our other Networks, supported by London's 50% flat content, compared to a 19% maximum elsewhere. This is described more fully in the Regional Factors response (see Cost Efficiency Chapter 2, Question 1)

6.24 Ofgem accepted the evidence provided in GDPCR1 and allowed NGGD a London factor for Emergency[8]. Our analysis this time is more thorough, and was provided in our plan and so we are surprised that no allowance is made.

6.25 The inclusion of a London factor will bring our proportion of the total core emergency spend up to [redacted] and close to the CSV proportion of [redacted] the lower value appropriate to the greater sparsity of networks such as [redacted] .

6.26 NGGD would however argue than in addition to the inclusion of a London factor the proposed correction to the deterioration rate assumption is also applied to the workload projections based on the CSV(which includes 20% external reports) movement.

6.27 This is detailed fully in the next section of this answer on the Repair IPs. In summary, although NGGD is replacing more pipe given the length of pipe remaining, it is not appropriate to give other companies higher deterioration rates. This is an engineering assessment using very uncertain data, and if the investment is being made in the right assets, the deterioration rates should be similar, so we propose that Ofgem apply a common assumption across Networks, based on industry average deterioration measured from a common start point.

6.28 Given a 20% Reports weighting, we estimate that a corrected approach would increase NGGD's Emergency CSV by around 1%.

[8] GDPCR1 – Final Proposals Section 3 paragraph 3.61 & 3.69

6.29 In addition there are some errors have been made in the modelling of the customer number driver, given an 80% weight in the regression. Customer numbers for West Midlands, Scotland and Southern have been frozen at 2010/11 levels, rather than increased with new customers.

Loss of Meterwork

6.30 Firstly there is the critical error in Ofgem's assessment on the impact of Loss of meterwork. Our view is that this is an unacceptable level of allowance for this external pressure and is set out in full in response to the specific question on loss of meterwork (Chapter 4 Question 3).

6.31 At a high level Ofgem have set an allowance at a quarter of what it should be by only considering the stranded costs experienced by NGN for opex and ignoring NGN's clear explanation of the impact on repex.

6.32 This results in an omission of c£13m p.a. that should be allowed and is another area where Ofgem have failed to apply any level of sense checking to their findings, where if you compare the allowed loss c.£3m pa, this is in no way comparable to the current GDPCR1 revenue driver for loss of meterwork would give additional revenue of £18m p.a. if meterwork was fully lost in 2012/13.

6.33 The correction of this omission would set the stranding impact just below the value that Ofgem derived for the impact at loss of metering in the current GDPCR1 revenue driver.

CO Output Commitment

6.34 Lastly, without correction of the above factors, we will have to review our output commitment to visit 2.1 million customer homes to carry out a CO advice service. This was predicated on funding to provide an emergency service that enabled standby time to be utilised for CO visits. This funding is not allowed and we are benchmarked against networks that are not providing this CO awareness visit output. This is also covered in our response to the Output, Incentives and Innovation document Chapter 4, Question 2.

Summary

6.35 **We would ask Ofgem to revise the IP for the more appropriate level of external reports, correct the errors with regards to Loss of Meterwork and customer numbers, and apply a Network Specific Factor reflecting the difficulties of operating in London.**

Repair

(Appendix 2, para 1.12 – 1.17, Table A2.3)

Summary of our Position

6.36 The Initial Proposals allowance for Repair has two areas where the approach / assumptions made by Ofgem lead to an unjustified allowance for NGGD.

6.37 NGGD run common systems and processes across our Networks, the Initial Proposal's apparent £4.9m p.a. London efficiency gap (and a ranking of 1,2,3 and 8) cannot be right when our next (3rd ranked) network has a gap of only £0.7m p.a. This unfair disparity comes about from:

- The IP assumes that London is an easier Network to operate Repair activity than any other – the only (negative) Network Specific Factor applied is sparsity of £0.8m pa. The reason given for applying a sparsity adjustment - that travel takes noticeably longer in rural environments - we show not to be valid.
- Network Specific Factors of £2.4m pa for the London environment, similar to those applied by Ofgem to repex, should be applied to Repair.
  - NGGD evidence of underground congestion driving lower productivity in repair (e.g. comparatively larger hole sizes for same diameter mains)
  - No sense check on the differential gap, especially considering NGGD evidence and GDPCR1 determination agreed to a factor.

6.38 Reversing the sparsity adjustment, adding the repex-type Network Specific Factors and reversing the IP's reduced deterioration of £1m produces a more plausible gap.

6.39 The second area is over the deterioration assumptions which are flawed resulting in the NGGD proportion of the total Repair workload falling from 47.2% in 2010/11 to an unjustified 41.6% in 2020/21. This is due to:

- Companies have not reported the data consistently in the past
- Companies have used different start points to their analysis
- The answer is unreasonable – given the age of our Networks our deterioration assumptions should not be materially less than those of the other companies.

6.40 We propose that our Plan deterioration assumptions be made more consistent with the other companies, by recalculating them from 2005/6, rather than 2003/4.

6.41 From this point, we propose that a common assumption be applied, using the average deterioration rate – we prefer an average to an Upper Quartile calculation be used, as this is an engineering rather than efficiency assessment.

6.42 Due to the flawed deterioration calculation the IP's output commitment for unplanned interruptions is not attainable.

6.43 **In summary, Ofgem need to review the regional factors and deterioration rates in order to provide an appropriate allowance for London and more robust determination on deterioration rates.**

Justification of Our Position

Figure 6.2 – Repair Costs over RIIO period (average annual)

£m pa	Plan (i)	IP(ii)	Variance		
NGGD	41.3	36.3	-5.0	**%NGGD share of total**	
NGN	16.8	11.7	-5.1	Actual 9-11 average	**47%**
SGN	32.9	26.0	-6.9	Plan p.a.(i)	**40%**
WWU	12.7	9.1	-3.6	IP p.a.(ii)	**44%**
	103.7	**83.1**	**-20.6**	CSV (2010/11)	**47%**
				IP CSV (2020/21)	**42%**

(i) excluding costs moved to uncertainty
(ii) before reconcilliation to final allowances

6.44 Looking at the high level summary above, NGGD observe that

- There are clearly differences in network assumptions across the four companies, from the plan submission NGGD share of total repair costs fall from 47% (consistent with CSV size) to only 40% in the plans over the RIIO-GD1 period. The IP look, to a degree, to correct for this anomaly.

  Examining the shared data tables it is a clear example of where there is a divergence of assumptions, which if Ofgem took an analytical approach they could a make appropriate adjustment for and then carryout an 8 year RIIO-GD1 benchmark. Without such adjustment it is not surprising that Repair regression fails the statistical texts. This is discussed in more detail in Chapter 1 Question 1.

- The overall net disallowance for NGGD of £5m p.a. (i.e. the combination of adjustments to deterioration rates and regression, RPE and ongoing efficiency modelling) is on further examination all found to be in London.

  NGGD are surprised the initial proposals conclude that this shows London to be relatively inefficient, given their analysis's ranking of 1,2,3 and 8 for NGGD's four networks[9], the evidence we have provided[10], and the fact that in GDPCR1 Ofgem did allow such a factor.[11]

- NGGD's share of the CSV in the IP is 41.6% by 2020/21. This is surprisingly low. Back in 1999, NGGD's four networks had 50% of the Repair workload, compared to 47.2% in 2010/11. Therefore in 11 years NGGD has reduced its share of industry Reports by approaching 3%, in contrast to the IP asserting that the following 10 years NGGD's share will fall by a further 5.5%.

  This level of disparity in the number of repair work (the CSV) has not been justified – it is rewarding poor performing asset management networks.

[9] Initial Proposals, Cost Efficiency document, Table 5.1, 2014 model
[10] Nov & Apr Business Plan – A5.1a Network Specific Factors Opex, G1 Benchmarking and Network Specific Factors
[11] GDPCR1 – Final Proposals Section 3 paragraph 3.61 & 3.69

6.45 This led NGGD to examine two aspects of Ofgem's analysis

- the complete omission of NGGD's Repair London factors, and
- understanding why NGGD and Other companies workloads are varying to a greater extent than historic trends suggest.

Regional Factors

6.46 The only Network Specific Factor included by Ofgem in Repair in IP is for sparsity, which allows increased costs in rural Networks. Consequently, as London is the most urban Network it has the largest negative adjustment, so the IP assumes that London Network is the easiest in which to carry out Repair work.

6.47 The IP's logic for applying a sparsity factor to Repair is that travel times are longer in more rural areas.

6.48 We do not believe this is correct. Under our SMART travel system all journeys of company vehicles are monitored. The table below shows average Repair journey times for each of our 5 operational areas between July and September 2010, excluding first and last journeys of the day.

Figure 6.3 – Repair Journey Times

	Average journey (mins)	Rural rank
East Anglia	17.1	1
East Midlands	16.6	2
London	16.9	5
North West	15.4	4
West Midlands	16.0	3
NGGD	**16.3**	

6.49 It can be seen that there is no clear relationship between sparsity and journey times for Repair. Rural journeys are longer than elsewhere, but average speeds are higher, so the two effects broadly cancel.

6.50 Where there is a clear sparsity impact is on Emergency productivity, due to the requirement to attend 97% of escapes in an hour, FCOs need to be positioned in locations where there is little work. However, the tight time attendance requirement does not apply to Repair, so neither should the sparsity adjustment.

6.51 However, we believe that there are very strong grounds for providing a significant Network Specific Factor adjustments for those factors which act to increase London Network's Repair costs as follows:

- In respect of repex, mains reinforcement and connections the IP does apply an adjustment on the grounds that *"…we accept arguments that in practice there are lower levels of productivity in London associated with more congested infrastructure, depth of infrastructure and reduced access."* IP Cost

Efficiency paragraph 1.12. Because Repair is similar activity to these a similar adjustment should apply.

- There is regulatory precedent - at GDPCR1 Ofgem made an adjustment of £2.2m p.a. for Repair and Emergency together.
- We have identified four major Network Specific Factors, which together add £2.4m p.a. to the costs of operating in London, as summarised below:
  - Additional cost of dealing with larger diameter mains repairs - £0.6m: London Network has larger pipes than other Networks, these require repair, which take longer and are more difficult than smaller diameter repairs.
  - Deeper and larger excavations - £0.8m: London Network's pipes are on average around 9% deeper than those elsewhere. That and the use of JCBs to excavate through concrete roads add to the volume and hence cost of reinstatement.
  - Productivity impact - £0.7m: the effect of the more difficult underground environment, including depth, makes London jobs more time consuming than in other areas, having adjusted for the diameter band of repairs.
  - JCB hire - £0.3m: the additional cost of JCB hire for London's concrete roads, the concrete typically lying beneath the wearing course (surface).

6.52 In response to Ofgem's invitation in IP, we have put together a short Appendix which summarises the main Network Specific Factors for London Network alone, which we have compiled from the full Network Specific Factors submissions from our earlier Business Plans.

6.53 The unreasonableness of the IP position can be seen by comparing the Business Plan disallowances across our Networks, as shown below.

Figure 6.4 – NGGD Repair costs over RIIO period (average annual)

£m pa	Plan [(i)]	IP[(ii)]	Variance
EoE	11.0	11.0	0.0
Lon	15.1	10.2	-4.9
NW	9.3	8.6	-0.7
WM	5.9	6.5	0.6
	41.3	**36.3**	**-5.0**

(i) excluding costs moved to uncertainty
(ii) before reconciliation to final allowances

6.54 The London disallowance is £4.2m p.a. more than NGGD's next placed network (NW), an order of magnitude worse. Given our national process and organisation it is not credible to believe this is all or even largely 'efficiency'.

6.55 We believe that around £1m of this is due to the IP's larger adjustment to London's deterioration rates (see below), but around £3m is due to Network Specific factors i.e. the unreasonable inclusion of sparsity, and the exclusion of those factors that make London a difficult operating environment.

6.56 We therefore contest that no adjustment should be made for sparsity for Repair, but that an adjustment of around £2.4m p.a. should be made, similar to repex, in respect of London's unique working conditions.

Deterioration Rates

6.57 A summary of the range of mains and services deterioration rates contained in Business Plans is shown with the IP assumptions in the table below.

Figure 6.5 – Deterioration Rates

Deterioration assumptions - April Plans			**IP proposed**	
	Mains	Services	Mains	Services
EoE	1.6%	2.6%	1.6%	2.6%
Lon	4.4%	5.1%	2.5%	3.1%
NW	3.1%	6.8%	2.1%	3.5%
WM	3.1%	3.0%	2.1%	2.7%
NGN	3.3%	9.2%	2.2%	4.0%
SC	6.2%	4.3%	3.1%	3.0%
SO	3.1%	5.6%	2.1%	3.2%
WWU	4.8%	9.5%	2.6%	4.0%
NGGD	3.1%	4.4%		
iDN	4.4%	7.1%		

6.58 For the Business Plans the table shows that the range is considerable and the average NGGD rate is well under the average of other companies.

6.59 For the IP proposals, Ofgem has used an Upper Quartile, which is then scaled back in some way to leave those Networks claiming higher deterioration with a higher assumed rate than others.

6.60 We do not believe that the approach adopted is robust for a number of reasons:

- The historic data used to as the start point of the deterioration calculations is not robust. There has been a consistency problem in the reporting of Reports between networks, as stated by Rune Consultants, in their 2010 Report on the RRP. They stated that *"Performance comparison in a number of opex areas continues to be a challenge due to different approaches to reporting and cost allocation taken by GDN owners".* As an example of this Rune also referred to large discrepancy in the ratio of Reports to Repairs[12].
- Companies have used different time periods over which to estimate deterioration, to which the answer is highly sensitive. NGGD has used the period from 2003/4 to 2010/11 as the basis for its calculations. However, we understand that the other companies have used the period from 2005/6 to 2010/11, the period since Network Sales. Were we to adopt the practice of the others, we estimate that our mains deterioration rates would increase by

[12] Rune Associates 2010 report & NGGD November Business Plan – Appendix A7.1 – Benchmarking 3b.1

37% and those for services by 80% i.e. to levels similar to the other companies.

- The answer does not appear reasonable. We operate in most of the larger cities in the country, and are typically less rural. Therefore, we would expect to have the older pipe networks, which would be expected to deteriorate faster. This is reinforced by data on the average age of pipes in each Network, which we retained from 2005, before Network Sales. This shows that our pipe population both in total and post-1900 (a significant proportion of the data from 1900 and prior appears suspect) was older than those of the other companies.

Figure 6.6 – Average Age of Non-Plastic Mains by Network in 2005

March 2005 non plastic mains average age by network										
Years	EoE	Lon	NW	WM	NGN	SC	SO	WWU	NGGD	Other
All	52.7	58.5	60.1	55.9					56.4	
>1900	52.0	55.0	55.8	55.2					54.2	

6.61 Despite the above, it could be argued that the other companies' deterioration should be slightly faster than NGGD's as our share of industry Reports has fallen from 50% in 1999 to just over 47.2% in 2010/11.

6.62 To the extent that this is not due to reporting differences, we believe that this demonstrates that our mains replacement programme has been more effective in reducing Repair work than those of the other companies.

6.63 Having demonstrated that the IP approach is not robust, and there is no strong reason why NGGD's deterioration should be significantly less than that of the other companies, we turn to what approach should be taken.

6.64 The first step must be to make the calculation as consistent as possible. The differences in reporting cannot be resolved, but the period of the calculation can be made consistent. The most straightforward way of achieving this is to adopt the approach of the other companies i.e. running from 2005/6.

6.65 Restating our numbers to start the deterioration calculation from 2005/6 produces the numbers shown in the table, with much more consistent rates.

Figure 6.8 – Deterioration Rates based on consistent 2005/6 to 2010/11 Analysis

Deterioration assumptions - April Plans adj		
	Mains	Services
EoE	3.9%	10.0%
Lon	7.4%	8.8%
NW	3.2%	8.3%
WM	3.0%	6.6%
NGN	3.3%	9.2%
SC	6.2%	4.3%
SO	3.1%	5.6%
WWU	4.8%	9.5%
NGGD	4.4%	8.4%
iDN	4.4%	7.1%

6.66 As can be seen above, the deterioration rates are more similar, with the same average mains rates, but higher NGGD average ion services. Why the differences exist between the networks could be down to a lot of factors that cannot be identified. NGGD therefore believe that with consistency with other parts of Ofgem's methodology on regression and technical assessment there are two options

- Choose a true Upper Quartile i.e. 3.2% for mains and 6.3% for services: or
- Choose an average based deterioration i.e. 4.4% for mains and 7.8% for services.

6.67 Given that this is physical condition calculation rather than for efficiency, and given the uncertainties over the data, there appear to be reasonable grounds for using the average.

Output Commitments

6.68 We have an Output commitment in respect of the number and duration of unplanned interruptions. Because the level of deterioration assumed in the IP level was well below the level in our Plan, we cannot be held to an output commitment which we believe clearly understates the likely level of interruptions. Our proposals for the output on unplanned interruptions are stated in our response to Outputs – Chapter 7 Question1

Conclusion

6.69 The apparent RIIO 'efficiency' gap of £4.9m for London Network is largely explained by three reasons.

6.70 First, that the IP applies a £0.8m negative sparsity adjustment which we explain is only relevant to Emergency, not Repair, and so should be reversed.

6.71 Second, that there are a number of London Network Specific factors, similar to those that Ofgem have recognised for Repex and which Ofgem recognised at GDPCR1, which explain a further £2.4m of the gap.

6.72 Third, that the deterioration rates assumed in the IP reduce London's allowed costs by around £1m and are deeply flawed, not least because they have been calculated over very different time periods, and because NGGD's Networks are more urban and therefore older, there seems to good reason for our deterioration to be significantly below that assumed for the other companies

6.73 If the time period of the calculation were standardised, then either an average or Upper Quartile approach could be used, but given that it is an engineering calculation rather than an efficiency calculation we suggest the average be used.

Maintenance

(Chapter 6, para 6.15 – 6.17 and Appendix 2, para 1.18 - 1.21, Table A2.4)

Summary of our Position

6.74 Ofgem's proposals for Maintenance do not fund NGGD for critical safety and security of supply maintenance and integrity activities on our LTS pipelines and other high risk assets.

6.75 The Initial Proposals notes the increase in WWU's maintenance costs and states it will consider this before the Final Proposals, Ofgem is however silent on the increase in NGGD's maintenance costs and just benchmarks them out.

6.76 This response details the flaws in Ofgem's methodology using their four models to highlight why the approach has led to this under-funding.

6.77 Given the nature of maintenance, especially the non-routine cyclical element, and the resultant poor fit of the CSV, the regression results are weak (r^2 on historic models of 0.65) and result in a default cut of 50% on our evidenced increase from current levels through to the future year benchmark.

6.78 Ofgem's methodology has also ignored the increase in 'new' Asset Heath driven workload in our non routine maintenance programme. NGGD provided the justification for these increases in its November Business plan.

6.79 This additional work included expenditure for new technology that was developed through the Innovation Funding Incentive (IFI), enabling, for the first time, the ability to inspect previously un-piggable pipelines. The current disallowance effectively strands the expenditure to date but more importantly limits the integrity assessment of one of our most critical asset groups.

6.80 **Ofgem's methodology in the IP results in a disallowance of over £10m p.a. of the required safety related workload increase that NGGD need to carryout in order to manage our safety and security of supply obligations. Our Maintenance costs have been carefully balanced against our capex spend (which is lower than other networks) and therefore we ask Ofgem to revise its approach and allow the increases alongside their review of WWU increase.**

Justification of Our Position

6.81 The essential issue with the IP allowance for Maintenance is the complete omission to review the increase in NGGD's maintenance costs proposed in the submissions. The impact of the reduction (over 20% in two of our networks) in this critical asset management activity, which includes explicit statutory obligations, could have serious repercussions on both safety and security of supply. Given this we would have expected engagement or explanation in the IPs.

6.82 The IPs note the increase in WWU's maintenance costs and states it will consider this before the Final Proposals, it is however silent on the increase in NGGD's maintenance costs and benchmarks them out.

6.83 As the minimum Ofgem need to consider NGGDs increase in non-routine maintenance costs as for WWU, for which we summarise the evidence of our increase in non routine maintenance below.

Robustness of Maintenance Regression

6.84 The Maintenance regression is based on a Maintenance MEAV (i.e. the MEAV for those assets that are maintained under this activity), it does however have significant issues associated with it. We note that the historical regression does not pass the Ofgem tests and has an r^2 of 0.65. NGGD believe that this low measure of fit is not due solely to 'efficiency' but rather:

- The expenditure is specific to each network and is driven by different type of assets, importantly the cyclical nature of the work means that spend is not uniform. Indeed the duration, cyclical nature and scale of the activities means they are arguably more akin to capital works however, as reported in our RRP, under the current control (GDPCR1) and under RIIO-GD1 it is placed in operating expenditure.

- Additionally, we do not believe that the classification costs to maintenance (especially re non-routine) is consistent. Our review of data tables identifies the following anomalies:

  a. There are some significant costs (£11.9m p.a.) included by NGGD in NRMP that we believe may have been classified as Capex by some of the other GDNs. These costs include Pipeline & CP remedial and Special Crossings. [redacted] have no identified costs for these items, [redacted] have £0.7m in 'LTS pipelines unidentified' which may cover some of this activity, but it is unclear and we do not believe that £0.7m is sufficient to account for a comparable programme of work. [redacted] have £2.4m p.a. in total in NRMP for these items.

  b. [redacted] have included other items in NRMP (c. £[redacted]m p.a.) that we have classified as opex or capex activities. They include Transport & Plant, Diversions and Alterations, Preheating, Kiosk roof replacements.

c. [redacted] have also included £ [redacted] m p.a. of storage costs within NRMP, whereas our plan assumed no storage maintenance costs due to our holder decommissioning plan. Since the IP has both extended the duration of the decommissioning plan and provided a specific additional allowance for additional holder maintenance, we would question whether this allowance has been rationalised against the GDNs submitted plans, or if there is double counting of this maintenance cost for other Networks within their allowance.

d. [redacted] have included £0.1m p.a. of MOBs costs in NRMP. All other DNs would have included this in Repex.

6.85 NGGD therefore raise the issue of the limitations of maintenance MEAV as a driver, although joint attempts by all networks and Ofgem to develop a better composite size variable have failed. NGGD accepts Maintenance MEAV being the best available.

6.86 As such, NGGD we do not believe the 'gaps' are due solely to efficiency and the robustness of this Bottom-up regression.

6.87 This also highlights the problem of cherry-picking. Above are clear items of costs that NGGD incur within Maintenance but other companies may include elsewhere:

- Items NGGD have in opex are regressed out, but other companies look to have it allowed (at current levels) in capex. Indeed the other GDNs have capex 40% higher than NGGD.
- If costs were in ODA they would get allowed, but in Maintenance they may get disallowed.

Review of IP Historic and Future Regressions

6.88 Ofgem provision of their models was useful in checking for errors, gaining understanding of the interactions and implications of the consolidation process. In addition it enabled an understanding of why NGGD networks received different disallowances for Maintenance.

Figure 6.9 – Maintenance Regression Results – Gap to Efficient network (UQ)

	13/14 Gap to UQ based on		20/21 Gap to UQ based on		Change in Gap	
£m	Historic	Future	Historic	Future	Historic	Future
EoE	-3.2	-0.2	-5.8	-2.8	-2.5	-2.6
Lon	0.9	1.2	0.1	0.3	-0.8	-0.9
NW	-2.4	-1.5	-3.4	-2.5	-1.0	-1.0
WM	0.5	0.8	-0.2	0.1	-0.7	-0.7
NGN						
SC						
SO						
WWU						

+ve gap indicates forecast was below the UQ so allowance based on the higher UQ level

6.89 The figure above provides an extract of the results from the Ofgem modelling, from which NGGD would point out four observations.

- In 2013/14, WM and Lon perform well in this regression (being below the UQ and so positive gap) but EoE and NW perform poorly.
- As a result they move from poor performance in historic regression to good performance in Future regression. We suspect that this is due to specific non routine work in period 2008/9 – 2010/11. So as well as some workload differentials on routine it would appear that differences in non-routine workload also influence the gaps. The classification point made above.
- The gap in the Future regression is lower than the Historic regression. This is due, definitely for NGGD networks, to the necessary increase in non-routine maintenance. In effect Ofgem are allowing 50% of the increase in the bottom-up forecasts as the consolidation process basically takes the average.
- All of our networks performance worsens in 2020/21 compared to 2013/14, due to the increase in non routine maintenance in our plan which has not been considered. This is discussed in the next section.

6.90 The consequence of Ofgem's methodology in having the Historic and Future models has the effect on accepting only 50% of the increase in our plans – by default this is cut from our requirements, with no review of the merits/requirements. There may also be a further unjustified cut in forecast expenditure given the classification and non-routine nature of elements of Maintenance (i.e. UQ based on low non routine networks due to difference in phasing).

6.91 This is also inherent in the top-down models, although these two models do have advantage that the classification issues are smoothed out.

NGGD's Non-routine Maintenance Expenditure

6.92 The NRMP (Non Routine Maintenance) expenditure category includes expenditure relating to critical asset integrity work, improving and maintaining the health of our assets and includes statutory inspection and remediation works required by law.

6.93 The following figure provides a summary of the spend by the specific activities and how this compares to our 12/13 spend. In this figure we have categorised the items into three areas "enduring", "increasing" and "new" and is underpinned by our detailed asset condition and risk assessments.

- "Enduring" asset health expenditure is directly comparative to the activities in GDPCR1 with spend staying at a similarly level or reducing as a consequence of our asset condition and risk assessment,
- "Increasing" asset health expenditure relates to comparative activities in GDPCR1 that are increasing in response to our condition and risk assessment. This is offset by the reduction in the enduring category, and

- "New" Asset Health expenditure includes new environmental duties and new expenditure to accommodate new technologies that will enable us to undertake far more comprehensive condition monitoring of our assets, thereby improving our asset management capability and enabling us to undertake further life-extending works and in total accounts for an increase of £7.7m p.a. in comparison to GDPCR1.

Figure 6.10 – Movement in Non-Routine Workload Requirements

	Name/Description	RIIO £m pa.	12/13 £m pa.
Asset Health (New)	Previously un-piggable pipeline inspections (HI4)	2.0	0.0
	Previously un-piggable pipeline remedials (HI4)	1.4	0.0
	Sleeve remediation (including Nitrogen sleeves)	3.2	0.1
	Cathodic Protection Remote Monitoring	0.5	0.0
	Pipeline Adaptation re climate change	0.5	0.0
	PRS Adaptation	0.3	0.0
Total Asset health (New)		**7.7**	**0.1**
Asset Health (Increasing)	Special crossings below 7 bar	2.6	1.2
	Repair of Metal Loss Defects following OLI 1 and 4 surveys	2.6	1.7
	AGIs/PRSs WaH Compliance Upgrades	0.9	0.6
	AGI Pipe Support Repairs	0.4	0.1
Total Asset health (Increasing)		**6.5**	**3.6**
Asset Health (Enduring)	AGI Painting above 7 bar	1.5	1.5
	Special crossings above 7 bar	1.2	1.2
	OLI 1 Surveys	1.1	2.0
	Cathodic Protection (Remedials + stray current)	1.2	2.0
	River Bank/Bed remediation	0.9	1.2
	HP Valves	0.5	0.5
	AGI painting below 7 bar	0.4	0.7
	DSEAR Remedial Works (Vents and Ventilators)	0.2	0.1
	Pipeline Marker Remedials	0.2	0.2
	OLI 4 Surveys	0.2	0.4
	MP & IP Valve surveys	0.1	0.2
	Asbestos Survey and Removal	0.1	0.2
	Vibration Mitigation	0.1	0.1
	DSEAR Survey and Assessment	0.1	0.2
	Site Signage	0.1	0.1
Total Asset Health (Enduring)		**7.9**	**10.6**
Total NRMP Asset Health		**22.1**	**14.3**

6.94 The final issue NGGD has with the IP on Maintenance is that the increase in expenditure during RIIO-GD1 is, by default, ignored. Our plan provided detailed supporting evidence of the expenditure requirements, but for clarity the increases in New Asset Health are summarised below:

- Health improvements for previously un-piggable pipelines[13] (£3.4m p.a), The proposal around this investment follows the development of new technology through IFI funding to enable automated testing of LTS pipelines for safety and security. Now this technology is available the safety regulations make it mandatory for us to utilise this technology on the basis that the alternative above ground monitoring techniques are extremely poor by comparison.

[13] November Submission - Appendix 8.5, section 3, paragraphs 3.35-3.45

- Increased investment on sleeves (£3.2m p.a.), in addition to Nitrogen sleeve investments in order to improve their maintenance programmes. This investment is required in an area where there are known safety issues regarding the corrosion on carrier pipes within sleeves[14].
- Investment on Remote Monitoring of Cathodic Protection[15] schemes in order to ensure an efficient network is being managed.
- Investment to mitigate the changing and increasing threats around flooding and climate change[16].

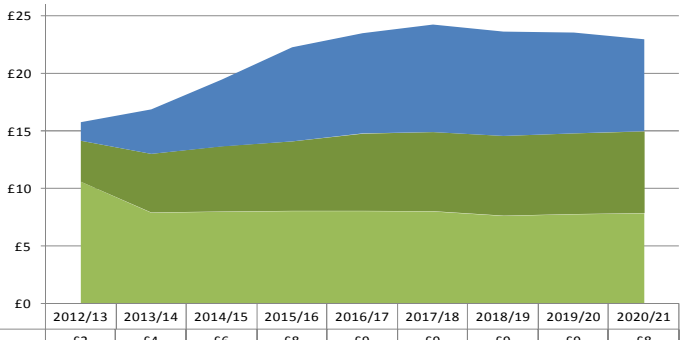
6.95 This work is an example of our totex approach to managing our assets which aligns with the RIIO principles and ensures we minimise the cost to consumers. This workload is a critical part of our strategy for maintaining and extending the life of our assets as an alternative to capital replacement, which is in contrast to the other GDNs and is reflected in the that fact we have the lowest capital investment spend of all the GDNs .

The difference our profiling means

6.96 In response to this increase in workload we have considered *deliverability* to ensure we can efficiently execute the programme, the profile for RIIO-GD1 is shown in the following figure and, as can be seen, we have profiled the spend increasing from the start of the period. Deliverability was a requirement of RIIO and as such we were expecting this to have been acknowledged by Ofgem.

6.97 However, under Ofgem's assessment, by including a profile to reflect efficient delivery Ofgem's analysis has resulted in a reduction to the overall allowances that would have not happened had we just included a flat profile.

Figure 6.11 – Non Routine Maintenance Profile



	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
New investments	£2	£4	£6	£8	£9	£9	£9	£9	£8
Increasing enduring investments	£4	£5	£6	£6	£7	£7	£7	£7	£7
Flat enduring investments	£11	£8	£8	£8	£8	£8	£8	£8	£8

[14] November Submission - Appendix 8.5, section 3, paragraph 3.46-3.58
[15] November Submission - Appendix 8.5, section 3, paragraph 3.64-3.67
[16] November Submission - Appendix 8.8, section 3

Summary

6.98 **Ofgem's methodology in the IP is resulting in a disallowance of over £10m p.a. of the required safety related workload increase that NGGD need to carryout in order to manage our safety and security of supply obligations. Our Maintenance costs have been carefully balanced against our capex spend (which is lower than other networks) and therefore we ask Ofgem to revise its approach and allow the increases alongside their review of WWU increase.**

Other Direct Activities

(Appendix 2, para 1.22 – 1.26, Table A2.5)

Summary of our Position

6.99 The IP allowances for Other Direct Activities (ODA) contain errors, inconsistent treatment and an example of cherrypicking. Indeed an acknowledged error in double count leads to the 34% increase for [redacted], which demonstrates the lack of sense checking of Ofgem's results.

Figure 6.12 - ODA Costs over RIIO period (average annual)

£m pa	Plans	IP[ii]	Change	
NGGD	28.7	28.7	0.0	0%
NGN	10.8	14.5	3.7	34%
SGN	16.8	18.6	1.8	11%
WWU [i]	7.1	6.7	-0.4	-6%
	63.4	**68.5**		

(i) after adjusting for costs into uncertainty mechanism
(ii) before reconciliation to final allowances

6.100 As well as the error, which Ofgem acknowledge with regard to NGN costs, NGGD has two areas where we consider Ofgem should revise their IP allowances.

- ODA is a category of cost which picks up costs that do not fit elsewhere. We have placed less costs in ODA than other companies. By allowing this category of cost in full, but not others, Ofgem are cherrypicking and we are disadvantaged to the value of around £3.4m p.a.
- The smart metering set-up costs allowed by Ofgem are omitted in the bottom-up modelling, an item Ofgem themselves spotted post IP.

6.101 **We would ask Ofgem, as well as to correct the identified errors, to act on the overriding issue of bottom-up cherrypicking for which other ODA costs are a visible example.**

Justification of Our Position

6.102 The IP allowances for Other Direct Activities (ODA) contain errors, inconsistent treatment and an example of cherrypicking. Indeed an error in double count leads to the 34% increase for [redacted], which demonstrates the lack of sense checking of Ofgem's results.

Figure 6.13 – ODA Costs over RIIO period (average annual)

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WWU (i)	7.1	6.7	-0.4	-6%
	63.4	**68.5**		

(i) after adjusting for costs into uncertainty mechanism
(ii) before reconciliation to final allowances

Other ODA Costs

6.103 Within the ODA cost base, there is a clear case of cherry picking where core costs for iDNs are 42% higher than NGGD equivalent costs. This results from different categorisation of costs through the different activities. Since Ofgem are not applying benchmarking to ODA costs, any base costs that have been classified within ODA rather than their specific activity cost will not be treated fairly across DN's in terms of allowances. This is giving an unfair advantage in of up to £3.4m p.a. over RIIO for the iDNs above NGGD.

Figure 6.14 – ODA Base Costs

£m, p.a.	NGGD	Other Networks
RIIO ODA Average Cost (Submitted Plan)	**28.1**	**54.0**
less Interruption (NGGD,	-0.4	
less xoserve(all)	-19.6	
less NTS Offtak		
less Smart Metering		
less Lane Rental/Permits		
less Cost of RIIO		
RIIO ODA Levelled Cost	**8.1**	
Difference		

6.104 From the data tables it is clear that the main reason for the higher expenditure level in the other four networks is down to higher material costs being coded into ODA. This is very likely to be due to classification differences hidden within different accounting systems, with NGGD probably coding more to direct activities. This is a clear example of cherrypicking at work and an outcome that is prejudicial against NGGD, as NGGD has costs in other activities that get

benchmarked out, but then other companies benefit from being allowed the whole cost in ODA.

6.105 Also, the additional [redacted] 'Cost of RIIO'[17] (£0.4m p.a.) is equivalent to the cost NGGD have built into its new operating model in our work management activity (£ [redacted] m p.a.[18]). In work management our costs are benchmarked out, leading to further cherrypicking, equivalent to £1.6m p.a.

Smart Metering

6.106 The final point is in respect of the additional error within Ofgem's modelling. The smart metering set-up costs discussed in Table 4.5 have not been included in the bottom-up models despite being noted in the narrative. This excludes equivalent of £0.4m p.a. from the IP allowance (£3.2m in total as per Table 4.5). Although detailed in the Narrative paragraphs 4.26 to 4.28, it is not included in the bottom up models, and only appears as an adjustment in the top-down Totex model. This is an item Ofgem themselves spotted post IP (number 9 in log of Ofgem errors), and subsequently by [redacted] . We note, however, that in Ofgem's response to the logged errors (ref number GD1-NGNPh4-5), they indicate that 'No error exists'. We do not believe that this is true.

Summary

6.107 **We would ask Ofgem, as well as to correct the identified errors and act on the overriding issue of bottom-up cherrypicking for which other ODA costs are a visible example.**

[17] WWU Data tables – 2.1 Other, NSA & provisions, row 221
[18] November Submission - Chapter 9 – Our Work Delivery Expenditure – Section 8 Paragraph 8.19

Business Support Activities

(Chapter 6 para 6.23 – 6.25 and Appendix 2, Table A2.6)

Summary of our Position

6.108 The IP allowances for Business Support activities give an inappropriately low outcome, having been set on an external upper quartile (UQ) benchmark for which no tests of industry comparability have been evidenced. This is against the advice of the external consultants concerns on 'cherry-picking' and with no previous consultation with the companies as to appropriateness of the external benchmarking comparators.

6.109 The IP predominantly sets the allowances on an external UQ benchmark[19]. Ofgem have not shown any evidence or justification that these external benchmarks are not influenced by industry/international differences or that the selection of the driver is 'best practice'. Indeed our business plan provided evidence to the contrary and this is articulated further in this response with external evidence for both IS and Property.

6.110 NGGD would assert that this provides justifiable evidence that benchmarking conditions are not met sufficient to enable adoption of the external UQ benchmark as the starting base for setting allowances. Indeed, this position was stated by Ofgem's own consultants.

6.111 The initial proposals, which are based on the UQ, give rise to inherent built-in 'cherry-picking' effects:

- The use of individual benchmarks for specific business support areas in GDPCR1 which gave rise to 'cherry-picking' effects was recognised an adjusted by Ofgem.
- The methodology used in RIIO-GD1 exacerbates the 'cherry-picking' effect further by selecting the 'lowest' of the external UQ and the network UQ, and
- Its use for setting the allowances is contrary to the advice of Ofgem's consultants.

6.112 The application of a 'gap' closure for provision of networks' own benchmarking does in part overcome the concerns of the consultants, but given the reservations demonstrated above and limitations of the closure analysis (articulated later in this section) this does not adequately correct for the 'cherry-picking' effect and the unjustified benchmark. For example, in property:

- Our forecasts costs are assessed to be 55% inefficient as compared to the external benchmark/UQ based on revenue.
- However, benchmarking of professional property benchmark organisations, such as TOCS and IPD, as evidenced to Ofgem indicate we are at the UQ.

[19] The Hackett Group, on behalf of Ofgem

- In addition, in contrast when the same forecast costs are assessed using the networks benchmark the gap (so called 'inefficiency') is considerably less at 12%. Here there can be differences such as NGGD holding costs in property (e.g. training centres), but other networks not (they purchase in facilities costs by using outsourced providers) – a classic cherry-picking effect.

- Ofgem close the 55% gap of the external benchmark/UQ up to or by 36% leading to a net 37% disallowance because NGGD provided benchmarking data, but NGGD observe we provided more detail than [redacted] despite using same TOCS data set and [redacted] had a higher gap closure granted.

6.113 NGGD do accept that the drivers could be used in Network UQ analysis, as being one of a few appropriate size variables upon which to assess efficiency within an industry. NGGD have however identified normalisation issues (for example around adding non formula costs into our cost base but no adjustment in denominator (i.e. revenue)) and errors that need development in the analysis of the Network UQ benchmarking assessment.

6.114 **Given the evidence provided in this response, demonstrating the flaws and unjustified stance taken in the Ofgem methodology for setting business services allowances NGGD is proposing that:**

- **The use of 'Networks' UQ is used throughout this Benchmarking exercise because the comparison is industry specific, with greater comparability of costs and drivers.**

- **The errors and issues associated with normalisation need to be corrected**

- **An appropriate adjustment is made for the inherent cherrypicking effect, either through a more representative / fair position of the efficiency reward mechanism, or the uplifiting of individual activity to the total opex allowance (middle =up) as carried out in GDPCR1.**

Justification of Our Position

6.115 The IP allowances for Business Support activities give an inappropriately low outcome, having been set on an external UQ benchmark for which no tests of industry comparability have been evidenced, against the advice of the external consultants concerns on 'cherry-picking' and with no previous consultation with the networks. The scale of the disallowance is illustrated in the table below that identifies a material 23% average disallowance across all networks.

Figure 6.15 – Business Support Costs over RIIO period (average annual)

£m pa	Plans	IP(i)		
NGGD	87.8	64.6	-26%	**%NGGD share of total**
NGN	18.3	14.8	-19%	Plan Fcts **54%**
SGN	34.9	27.9	-20%	IP **52%**
WWU	20.2	16.9	-16%	
	161.2	**124.2**	**-23%**	

(i) pre reconciliation

6.116 The fact that NGGD's share of the total plan forecasts fell from the 54% demonstrates that there is an element of higher expenditure than our competitors and we accept any such reduction. The fact that it did not fall to closer to 50% is a result of the higher allowance made to NGGD than to the other companies for provision of own external benchmarking evidence and use in the plan. A key example of this is in Property were we demonstrated[20] that external benchmarking had identified areas of high spend which our plans then clearly demonstrated would be addressed early in the RIIO-GD1 period.

6.117 Not withstanding that, NGGD firmly believe the IP allowances are unjustified in their level of disallowance across all networks as set out below.

Suitability of External UQ Benchmark

6.118 NGGD understands the desire to check the efficiency of networks against wider industry practices where possible, and we acknowledge that business support costs provide a logical first step. Our first sight of the analysis presented by Ofgem is very late in the price control process and NGGD consider it is not well justified as is set out below.

6.119 Benchmarking within industries can be inherently difficult - it is necessary to ensure that cost classification is consistent between companies. Despite years of annual reporting through the annual RRP process, there are still clear differences in classification between gas distribution companies (see additional details in Chapter 6 Question 1 section on Maintenance)

6.120 Cross industry benchmarking is even more difficult, as without detailed analysis, observations and cross checking with the different industries and organisations, the results always leave the reviewer with the question 'is it efficiency differences, inherent differences in the driver used or the way information has been collated'.

[20] November Business Plan – A7.1 Benchmarking – Figure 3e.22

6.121 NGGD has material concerns over the use of this benchmarking in setting of allowances as:

- Firstly, this is the first dialogue networks have had with Ofgem over this approach and no discussions have been held as to the suitability of the driver selection of cross industry differences.
- Secondly, despite requests for disclosure of the information pertaining to the external benchmarking and the need for checks on cross-industry comparability Ofgem are not willing to provide more detailed information

6.122 Both of these points of justification and transparency are cornerstones of RIIO and do not support Ofgem's upfront claim that benchmarking will be the start of the conversation.

6.123 Our justification for the benchmarking not being suitable for the setting of allowances can be evidenced by looking at two of the functions that make up Business Services: IT and Telecoms and Property.

6.124 Looking at IT and Telecoms, Ofgem use the number of end users as the driver. For certain elements of an IS cost base this is a very good driver (such as IS help desk costs). However, other elements are driven by other factors, such as the level of asset management which could cause inherently higher utilities costs compared to other industries rather than efficiency. We strongly urge Ofgem to investigate this further before settling on an UQ value and provide the evidence below:

- As evidenced in our business plans[21], NGGD benchmarks well against other utility organisations.
- Benchmarking information provided by Gartner[22] clearly demonstrates the variation of IT costs between industries, as evidenced in the Figure 6.16 below. For example, Healthcare is one of the industries in the Hackett benchmark and so from Gartner's information may well be driving the UQ benchmark. We have not seen any justification as to why the spend per employee in this industry should be similar to a utility.
- We have analysed the data from the same report and it is evident that the choice of driver can also have an influence as illustrated figure 6.17.

[21] April Submission – Supporting Document E7 – Business Support and Pass Through – Annex4 Benchmarking (Information Systems)
[22] Source Gartner: IT Spending and Metrics Report 2012,16 January 2012

Figure 6.16 – IT spending by employee, by Industry 2011

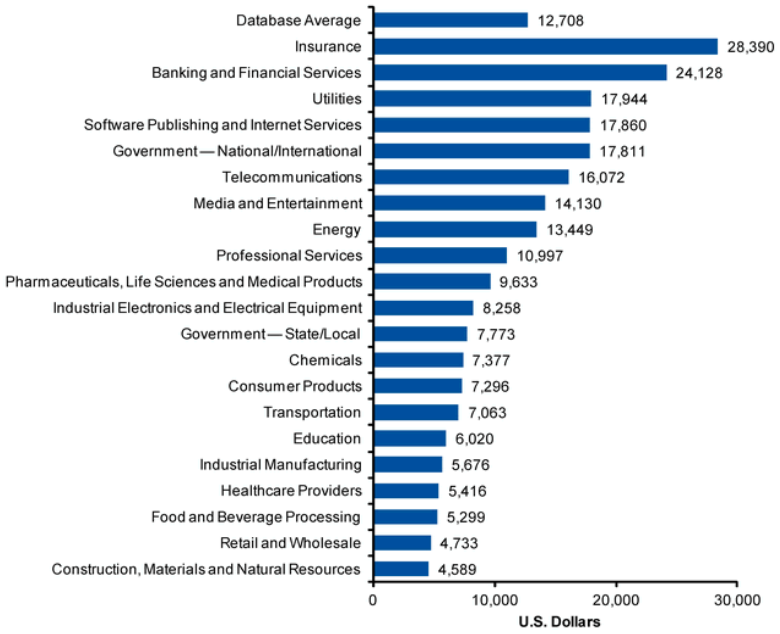


Figure 6.17 – Differences of Driver selection

	Employees	Opex	Revenue
Sample size	21	21	19
Utilities Rank	19	9	9
%Gap to UQ	-66%	-39%	-43%

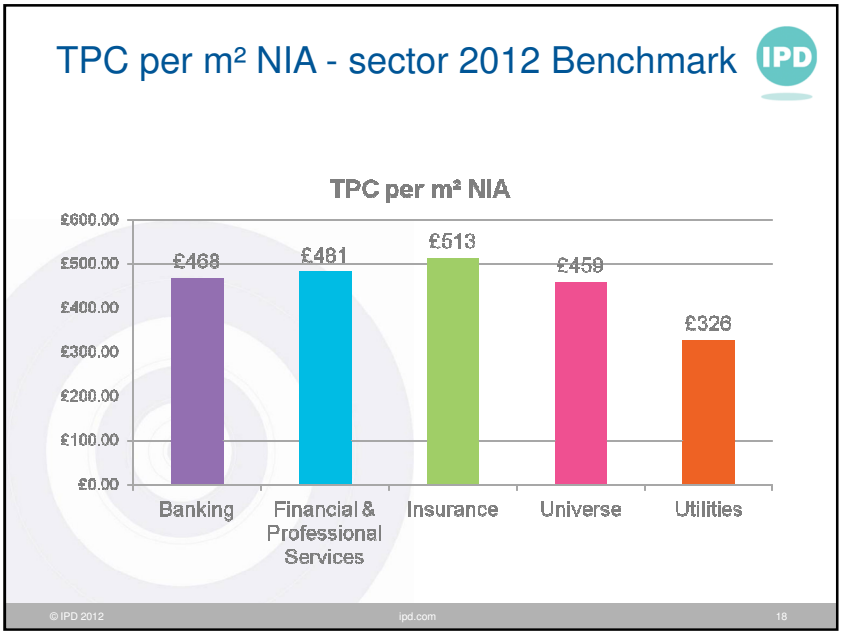
6.125 A second example is the driver for Property, that of revenue. As evidenced in our business plans[23] independent property specialists do not use this driver for benchmarking. There are clearly inherent differences between industry revenue streams and the amount of property they manage. Instead the drivers used are cost effectiveness of space and utilisation of space. Taken together these factors enable a clear comparison of relative strengths and weaknesses.

6.126 We sought information on whether there is inherent sector and regional difference in property from IPD Occupiers.

- Looking at sectors the cost per m^2 index indicates that utilities is actually more efficient – this is in sharp contrast to the cost per revenue – indicating the likelihood of the denominator (revenue) influencing the 'efficiency' differences rather than anything to do with the actual property efficiency.

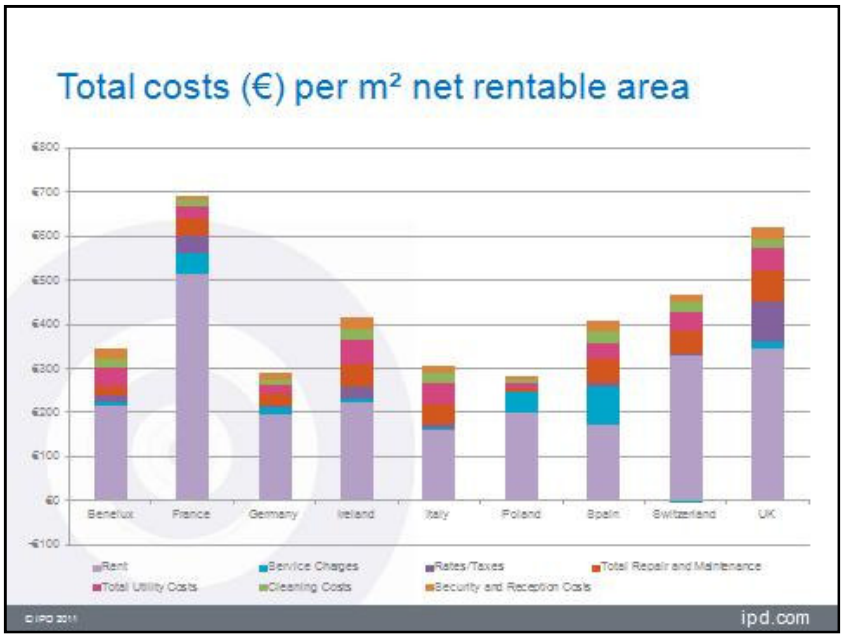
[23] April Submission – Supporting Document E7 – Business Support and Pass Through – Annex 4 Benchmarking (Property)

Figure 6.18 – Cross Sector Property Costs



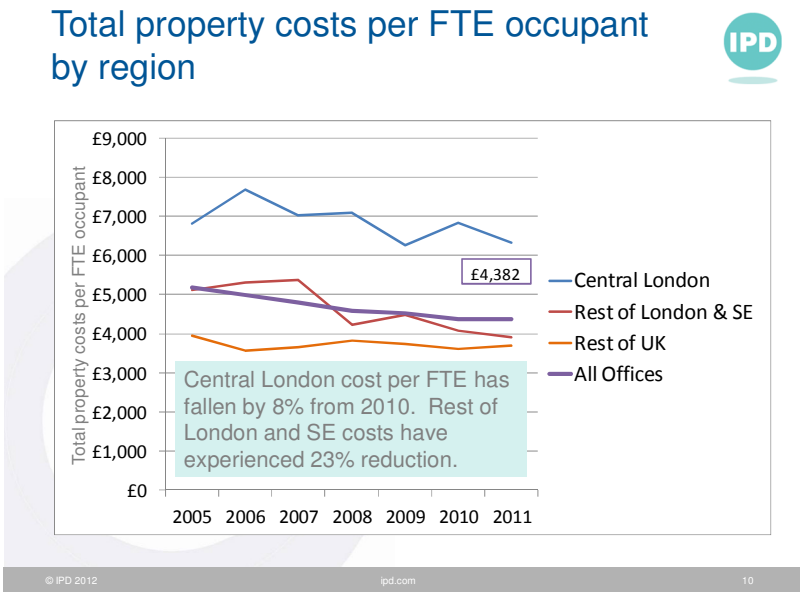
- On regional differences, IPD Occupiers data shows that there are large differences in performance across regions and the UK. As stated by IPD *'If a benchmark sample was created using data from all regions then benchmark would not be comparable to an organisation in any specific country i.e. it will not be a valid indicator of performance'.* Looking at their benchmarking it questions the validity of the international component of the UQ benchmark.

Figure 6.19 – Cross Regions Property Cost Differences



- IPD Occupiers also state *'within the UK the regional performance mean that it is necessary to give careful consideration when creating a UK benchmark'.*

Figure 6.20 – Cross UK Region Property Cost Differences



6.127 Other concerns include the selection of revenues of below £2bn and less than 20,000 FTEs and the absence of the utility sector from the benchmark means that specific industry characteristics are not taken account of.

6.128 Taken together this evidence clearly demonstrates that the direct use of the external UK benchmark in the IP is not appropriate.

Cherry Picking

6.129 The cherrypicking effect - that is the inherent consequence of selecting bottom up UQs to produce a phantom network of the best of the best in all activities was accepted by Ofgem in GDPCR1 and subsequently adjusted for. NGGD is therefore disappointed that the same arguments are being replayed during RIIO-GD1.

6.130 Within the models we have been given we can see a clear example of this UQ cherry picking effect as illustrated in the following table where Hackett looked at the make up of the CEO function. Interestingly it is within the Network UQ that the most significant cherrypicking effect can be seen.

Figure 6.21 – CEO example of Cherrypicking effect

Total Cost as a % of revenue	Hackett UQ	Network UQ
Executive Office & Group Strategy	0.081%	0.466%
Corporate Communications	0.019%	0.038%
Legal	0.080%	0.066%
Sum of Bottom-Up	**0.180%**	**0.571%**
CEO in total	**0.185%**	**0.902%**

6.131 Indeed, having read the Hackett benchmarking report, given the IP's use of the external UQ benchmark, we are surprised to find the following statements:

> *'Don't use the data as a default target – specific targets for the networks companies should be determined based on organizational strategic requirements',*
>
> *'Use the data to seek clarification',* and
>
> *Higher technology cost can be a good thing – reduces process cost*

6.132 The first statement has clearly been largely ignored, the IP has not considered organisational strategic requirements. For example, NGGD in its business plan[24] clearly articulated our higher reliance on IT systems. As a consequence we expect higher IT activity costs, but benefit from lower costs elsewhere. Benchmarking separately IT and the individual direct work execution costs and choosing the UQ for both is a clear example of cherrypicking. This is backed up by the third point and drives NGGD to stress again that greater credence must be given to totex benchmarking (as was RIIO philosophy (see response in Chapter 1 Question 1).

6.133 On the middle quote, Ofgem have not once sought clarification. Indeed, a principle of RIIO has always been that benchmarking is the start of a conversation. As such, NGGD is disappointed that this analysis has been done so late in the process, especially given that we and the other networks have been providing the information necessary for benchmarking for many years.

6.134 Finally we would point out that the IP has then cherrypicked even further by selecting the Network UQ for HR given it was lower than the external UQ value.

Benchmarking Evidence

6.135 Ofgem may believe that they have accounted for Hackett's position concerning not using the data as a default target through the introduction of efficiency additions. This process rewards network companies for demonstrating good benchmarking practice and having business plans which demonstrate that benchmarking feedback is being incorporated into future plans.

6.136 In the business plans that were submitted, both NGGD and our colleagues in Transmission provided independent but complimentary benchmarking information that supported the business plans of the shared activities. We are therefore surprised and disappointed that the IP has ignored the Transmission benchmarking information in their considerations, as illustrated in the table below:

[24] April Submission – Supporting Document E7 – Business Support and Pass Through – Annex4 Benchmarking (Information Systems)

Figure 6.22 – NG Benchmarking Information

Activity	Type	Organisation	Date	Ofgem Assessed
IT	Benchmarking	McKinsey	2009	Dx Only
	Benchmarking	Gartner	2010	Not Assessed
	Market testing	Various	2011	Not Assessed
Property	Benchmarking	TOCS[1]	2010	Dx Only
	Benchmarking	IPD[2]	2011	Not Assessed
Finance[3]	Market testing	TCS	2009	Not Assessed
Insurance	Market testing	Millers & AGRC[4]	2011	Excluded from Benchmarking
HR	Benchmarking	Saratoga	2011	Not assessed
Procurement	Benchmarking	Hackett	2009	Not Assessed

[1] TOCS – Total Office Cost Survey via Actium consulting
[2] IPD – Investment Property Databank
[3] Shared Services elements within Finance (HR & Procurment) functions
[4] AGRC - Aon Global Risk Consulting

6.137 As well as providing additional benchmarking evidence in areas such as HR and Procurement, Transmission also included evidence of significant elements of market testing in the activities of IT, Finance and Insurance. This is all valid supporting evidence and should be considered for final proposals.

6.138 A second significant concern is that on reviewing the IP we note that [redacted] (who used the 'Litmus Partnership' to calculate the TOCS via Actium Consulting, went to Actium directly (owners of TOCS)) were awarded a higher relative efficiency addition given that their evidence was based on the same TOCS database. We cannot understand this given:

- TOCS is an open system and has a uniform data set yet [redacted] are given a higher variability score. (NG8, [redacted] 10)?
- The data score analysis provides a lower feedback for NG for a low data score for the 'comparator not specifically designed for NG'. The data set that would have been built for [redacted] would have been identical, the data cannot be bespoke, and therefore there should be no difference in the scoring. (NG 7.6, [redacted] 8.1)
- We have a lower methodology score yet do not consider that [redacted] have explained the methodology to the same extent NG. We explained our methodology fully[25] and we urged that Ofgem approach Actium directly for clarification of benchmarks (NG 6, [redacted] 8.5)
- We have clearly demonstrated action/results in our well-justified plans, and do not believe the IP justifies why our scores are lower. (NG 8.8, [redacted] 10)

6.139 Given the above, NGGD do not believe such a differential in the efficiency reward mechanism of only 32.1% for NG and 68.9% for [redacted] is justified. We would urge

[25] National Grid Transmission 'Efficiency and Value for Money – March 2012 – Pages 59-62

Ofgem to reconsider this review and position NGGD the same, if not higher given our explanation, as the [redacted] score

Normalisations and Other Errors

6.140 In addition to the above, NGGD do not agree with some of the normalisations carried out by Hackett/Ofgem in applying the benchmarking.

6.141 In particular, to use gross functional costs and include the costs associated with non formula activity in 2010/11, however no normalisation was made to the driver (e.g. to include non formulae revenue). NGGD has more non-formula spend than [redacted] and consequently will have a disadvantaged benchmark result. It is not also clear how this compares to the external benchmark organisations.

6.142 A second item is on Insurance, where the IP stated that Insurance would be passed through based on 2010/11 actuals.

- Firstly, the current modelling clearly results in NGGD not being given its 2010/11 expenditure over RIIO-GD1.
- Secondly, in our RIIO-GD1 plan submission, we identified a correction to the classification of costs to Insurance from the 2010/11 RRP. This added c.£0.3m p.a. to Insurance from Finance and from CEO. This was explained and traced via one of the Supplementary Questions we received and so should be included as otherwise this is another 'cherrypicking' example. Additionally, although low materiality, when added to numerous other 'small' corrections they add up to a material value.

6.143 Other normalisation issues include:

- Finance, Audit and Regulation – the regulation part of networks activity were not normalised out against the Hackett external benchmark for Finance, they should be.
- In HR there is a double reduction of agency staff in Transmission numbers, which results in understatement of FTEs.

Summary

6.144 **Given the above critique, demonstrating the flaws and unjustified stance taken in the Ofgem methodology for setting business services allowances NGGD is proposing that**

- **The use of 'Networks' UQ is used throughout this Benchmarking exercise because the comparison is industry specific, with greater comparability of costs and drivers.**
- **The errors and issues associated with normalisation need to be corrected**
- **An appropriate adjustment is made for the inherent cherrypicking effect, either through a more representative / fair position of the efficiency reward mechanism, or the uplifiting of individual activity to the total opex allowance (middle-up) as carried out in GDPCR1.**

Training and Apprentices

(Appendix 2, para 1.27, Table A2.8 and Appendix 7, para 1.1 – 1.8. Table A7.1 and A7.2)

Summary of our Position

6.145 NGGD view the IP allowance for Training and Apprentices as being unreasonable, with an allowance that, even excluding the clawback values, rewards the highest cost submission, [redacted] , with an additional allowance.

6.146 Although agreeing with NGGD's workforce renewal requirement and proposed training/apprentice programmes a number of errors in the approach to arriving at, and calculation of, an allowed number of trainees and apprentices leads to the modelling actually cutting the number of trainees and apprentices by almost 300, pre-claw-back.

6.147 With regard to the clawback for under spend of current allowances, Ofgem are effectively re-opening the GDPCR1 price control, increasing regulatory uncertainty and breaching the commitments made in the RIIO handbook by proposing the asymmetric claw-back of under-recruitment of trainees/apprentices. This is particularly inappropriate given NGGD pre-GDPCR1 over-spend on trainees and apprentices.

6.148 With regards to the cost per trainee, Ofgem have looked at the annual cost per trainee and proposed a value based on an average cost. Because no review to understand the significant variance in the costs has been carried out, the average duration of an apprentice's training has not been considered. This leads to IPs that:

- Cuts NGGD's cost per qualifier (recruit) despite our plan submission having the lowest overall cost per qualifier (recruit) by around 18%.
- Rewards [redacted] , the fifth most efficient GDN, by allowing them a cost per qualifier that is around 18% higher than their submitted costs, given that their apprentices are trained for nearly double the length of NGGD's proposals.

Figure 6.23 – Ofgem Initial Proposals Unit Cost Position

	NGGD	NGN	SGN	WWU	Ofgem IP Position
Training/Apprentice Years Submitted	1795				Accepted *(but errors and claw-back reduce*)*
Average Training Years Per Qualifier	2.10				Accepted
Average Cost per Qualifier (£'k)	**90**				
Initial Proposals cost per qualifier (£'k)	73				No sense check of cost per qualifier

6.149 In addition, it would appear that Ofgem have not included in their review our requirements for the necessary ongoing training of our existing workforce.

6.150 **Overall, our review of the analysis, summarised above, and our assessment of the other networks plans would indicate that our overall training and apprentice costs are robust and should be allowed in full.**

Justification of Our Position

6.151 We do not accept the IP allowance for Training and apprentices to be an adequate, even when taking into account the position Ofgem have taken in the IP with regard to current period clawback, other networks get on average 122% of our allowance. We question this level of higher allowance given, on average we are of:

- similar size;
- similar age profiles (coming from the one organisation/industry); and
- with presumed overall higher recruitment this period (NGGD having a higher clawback so by default recruited less) the fact that other companies.

Figure 6.24 – Training and Apprentice Plans vs. IP Allowances – Per Network

£m pa	Plans	IP (i)	IP (ii)
NGGD	3.6	1.8	2.8
NGN	4.1	4.0	4.9
SGN	3.8	3.0	3.4
WWU	3.9	2.1	2.1
NGGD % Share	48%	37%	45%

(i) excluding reconcilliation
(ii) excluding reconcilliation, add back clawback (assuming clawback = FTE*3yr*£35k)

6.152 Indeed [redacted] allowance is 174% of our allowance (after adjusting for clawback) and despite their plan having the highest value, they look to be awarded with additional allowance.

6.153 Our review of the Training and Apprentices can be split into two key areas – 1. the calculation of the headcount adjustment, and 2. the calculation of unit cost and additional allowances. These key areas are then split into sections, detailed below. Sections A and B of this response supports the first key area and Sections C and D support the second.

- A. Errors in Headcount Adjustment Calculations
- B. Adjustment for under-recruitment during GDPCR1 –
- C. Unit Cost Calculation
- D. Additional Allowance

A. *Errors in Headcount Adjustment Calculations*

6.154 NGGD provided a well justified plan explaining the basis for the number of trainees and apprentices required during the RIIO-GD1 period to ensure we meet our workforce renewal requirement both during this period and beyond. However, in their Initial Proposals Ofgem cut NGGD's proposed number of trainees and apprentices by over 30% whilst stating that they agree with the proposals

submitted, thus suggesting that a sense check was not undertaken to confirm that the adjustments were correct.

6.155 Indeed, Ofgem state that they believe our long term workforce renewal requirements to be reasonable[26], that they have allocated qualified staff numbers to individual training and apprentice programmes in proportion to our forecast and have factored in our individual programme lengths[27]. As such it would be expected that they would arrive at the same number of trainees and apprentices as outlined in our April submission.

6.156 Ofgem supplied supporting spreadsheets which have enabled us to analyse their calculations and identify the errors that have driven this error in the reduction to the numbers of trainees and apprentices allowed.

Workforce Renewal Requirements

6.157 As discussed in paragraph 6.155 above, Ofgem have stated in their Initial Proposals that they believe our, and the other GDNs, workforce renewal requirements to be reasonable and have not outlined any reduction in these numbers. In Figure 6.25 below we have collated trainee and apprentice qualifier numbers from our April submission[28] and from one of Ofgem's' supporting spreadsheets[29], showing the number they have allowed, checking for any variances.

Figure 6.25 – Training and Apprentice Qualifiers by year during RIIO-GD1

	2014	2015	2016	2017	2018	2019	2020	2021
NGGD April Submission	23	11	52	110	104	126	133	141
Ofgem Initial Proposals	23	11	52	110	104	126	133	141

6.158 As can be seen the number of trainee and apprentice qualifiers allowed by Ofgem matches the number we forecast in our well justified plan, both within each individual year and the 699 forecast over the length of the control. As such it can be ruled out that the variation in headcount numbers is due to Ofgem disagreeing with our identified workforce renewal requirements.

6.159 Whilst NGGD's number of qualifiers can be matched through from submission to those allowed by Ofgem [redacted]. We believe Ofgem may have factored for this, but we still note that the allowed number of qualifiers during RIIO-GD1 is 10% higher for the other GDNs than NGGD.

[26] RIIO-GD1: Initial Proposals – Supporting document – Cost efficiency, Appendix 7, 1.2
[27] RIIO-GD1: Initial Proposals – Supporting document – Cost efficiency, Appendix 7, 1.5
[28] Taken from worksheet "2.8b A&T Numbers" of our data table submissions
[29] Ofgem supporting file "Workforce_renewal", worksheet "Total_Allowed", cells E8 – M8

Figure 6.26 – Trace of GDN submitted workforce renewal requirements to Ofgem allowed Qualifiers

	NGGD EoE	NGGD Lon	NGGD NW	NGGD WM	NGGD Total	NGN	SGN Sco	SGN Sou	SGN Total	WWU
GDN submitted RIIO-GD1 Workforce Renewal Requirement 2.8b	302	96	175	125	699					
NGGD attempt at corrected RIIO-GD1 Workforce Renewal Requirement 2.8b	302	96	175	125	699					
Ofgem Normalised Workforce Renewal Requirement	302	96	175	125	699					
Submitted RIIO-GD1 Qualifiers 2.8b	302	96	175	125	699					
NGGD attempt at corrected RIIO-GD1 Qualifiers 2.8b	302	96	175	125	699					
Ofgem Allowed Qualifiers					699					

Training and Apprentice Programmes

6.160 Given that all GDNs will have individual plans to meet their workforce renewal requirements we agree with Ofgem in requiring that all GDNs submit the details of their plans on a standard set of templates.

6.161 The submitted templates show that GDNs plan to utilise a wide variety of programme types and lengths to meet their requirements. Figure 6.27 below shows the length of the courses submitted by GDNs, which can be summarised as follows:

- NGGD submitted a plan containing 9 different types of programme with an average course length of around two years;
- [redacted] have proposed to utilise just one type of programme which lasts four years (although their published plan shows a length of three years which conflicts with the four years used in their data tables);
- [redacted] submitted a plan with 5 different types of programme with an average course length of just under three years; and
- [redacted] propose to use three types of programme with an average course length of around two and a half years.

Figure 6.27 – Training and Apprentice Programme Lengths

Company	Programme	Duration	Total submitted number of trainees / apprentices	Total submitted trainee / apprentice years	Pro-Rated Qualifiers submitted
NGGD	Emergency Adult Recruit	**0.25**	127	32	127
	Repair Adult Recruit	**0.25**	39	10	39
	Emergency 3yr programme	**3.00**	596	596	199
	Repair 2yr programme	**2.00**	470	470	235
	Maintenance 4yr programme	**4.00**	130	130	32
	Maintenance 3yr programme	**3.00**	215	215	72
	Maintenance 2yr programme	**2.00**	126	126	63
	CETP	**4.00**	132	132	33
	Graduate	**1.50**	84	84	56
NGN					
SGN					
WWU					

6.162 Ofgem have accepted all GDNs training programme lengths with the exception of our Maintenance 2 year programme, which is not shown at all in Ofgem's headcount calculations[30].

6.163 In their Initial Proposals Ofgem has also allocated total qualified staff numbers across individual programmes in the same proportion as GDN plans[31]. Although the accidental omission of our Maintenance 2 year programme results in the allocation for NGGD being skewed.

6.164 By reviewing Ofgem's interpretation and application of our submitted forecasts we can confirm that our workforce renewal requirement, programme lengths and programme allocations have been agreed and as such the allowed numbers of trainee and apprentices in Initial Proposals should match our well justified plan.

6.165 We have contacted Ofgem regarding the omission of our Maintenance 2 year programme, an omission which flows through to all subsequent headcount

[30] Omitted when Ofgem have transferred our submitted data into their "Workforce_Renewal" file, worksheet "Programme_Type_Numbers"
[31] RIIO-GD1: Initial Proposals – Supporting document – Cost efficiency, Appendix 7, 1.5

calculations Ofgem has undertaken, and they have confirmed this was omitted in error and will update their calculations[32].

6.166 The accidental omission of our Maintenance 2 year programme is responsible for a ***negative adjustment of 126 trainees and apprentices*** between the total we submitted and the number that has been allowed in Initial Proposals.

When can a trainee / apprentice meet the workforce renewal requirement?

6.167 As shown in figure 6.27 above, Initial Proposals allow the same number of qualifiers per year as we submitted in our April plan. However, in calculating the allowed number of trainees and apprentices required to enable these agreed qualifier numbers Ofgem appear to assume that all trainees and apprentices in the final year of their programmes can meet the workforce renewal requirement in that year, which is only true in the case of three of our nine courses:

- Craftsperson Type A / Emergency Adult Recruit
- Craftsperson Type C / Repair Adult Recruit
- Graduate Type C / Graduate programme

6.168 The approach we believe to have been used by Ofgem is correct for the courses listed above as they do not run for complete years (0.25 years and 1.5 years respectively), however all our other programmes run for complete years (2, 3 or 4 years) as such the trainees and apprentices would not be able to meet the workforce renewal requirement within their final year on their programme.

6.169 Figure 6.28, below, provides two simple illustrative examples of when trainees and apprentices can fill the agreed workforce renewal requirement and shows where Ofgem's approach is right and wrong.

- ***Example 1*** shows that a workforce renewal requirement has been identified for year 5 of the control period that can be met by qualifiers from the Graduate Type C programme.
- As the programme lasts 1.5 years the qualifier will be able to fill the requirement in their second year on the programme as they will qualify half way through this year, so the approach adopted by Ofgem is correct.
- ***Example 2*** also shows that a workforce renewal requirement has been identified for year 5 of the control period, but in this example the requirement is to be met by qualifiers from the Graduate Type A programme.
- As the programme lasts 4 years ***the qualifier will be able to fill the requirement in the year <u>following</u> their fourth year*** on the programme and not in the fourth year, whilst still training. As such the approach we believe to have been adopted by Ofgem, shown in the Initial Proposals supporting calculation documents, is incorrect.

[32] Response to NGGD question GD1-NGGPh4-22, responded to by Neill Guha on 4th September 2012.

Figure 6.28 – When Trainees and Apprentices can fill Workforce Renewal Requirement

Example 1: Graduate Type C (1.5 year programme)

Correct Approach	Control Period Year 1	2	3	4	5
Can meet renewal requirement					x
2nd training year					x
1st training year				x	

Approach Used in IPs	Control Period Year 1	2	3	4	5
Can meet renewal requirement					x
2nd training year					x
1st training year				x	

Ofgem Approach Correct

Example 2: Graduate Type A (4 year programme)

Correct Approach	Control Period Year 1	2	3	4	5
Can meet renewal requirement					x
4th training year				x	
3rd training year			x		
2nd training year		x			
1st training year	x				

Approach Used in IPs	Control Period Year 1	2	3	4	5
Can meet renewal requirement					x
4th training year					x
3rd training year				x	
2nd training year			x		
1st training year		x			

Ofgem Approach Incorrect

6.170 This error results in a phasing issue that sees GDNs allowed, on all but three programmes, funding for their training and apprentice costs in the following year to when they were incurred.

6.171 As our workforce renewal requirement peaks late in the RIIO-GD1 period, as shown in figure 6.28 above, and remains high after the end of the period this phasing error results in the under recovery of our RIIO-GD1 training and apprentice costs during the period.

6.172 Figures 6.29 and 6.30 below show the numbers of trainees and apprentices by year from our well justified plan[33] and the Initial Proposals supporting calculations documents sent to us by Ofgem[34].

[33] Taken from worksheet "2.8b A&T Numbers" of our data table submission
[34] "Workforce_renewal" file, "Total_Allowed" worksheet, cells E8-M8, E14-M14, E20-M20, E26-M26 and E38-M38

Figure 6.29 – NGGD trainee and apprentice April submission by stage of course

Stage of Course	2014	2015	2016	2017	2018	2019	2020	2021	Total
Qualifiers	23	11	52	110	104	126	133	141	699
< or = 1 year remaining on programme	23	45	94	90	120	122	135	140	769
> 1 yr and < or = 2 yrs remaining on programme	48	94	77	98	97	102	105	80	701
3 yrs remaining on programme	57	44	42	49	49	42	34	49	367
4yrs remaining on programme	16	5	6	8	8	8	14	19	83
Total trainee and apprentices	**144**	**189**	**220**	**244**	**274**	**274**	**287**	**288**	**1920**

Figure 6.30 – Ofgem Initial Proposals allowed trainees and apprentices by stage of course

Stage of Course	2014	2015	2016	2017	2018	2019	2020	2021	Total
Year Q	23	11	52	110	104	126	133	141	699
Year Q-1	10	48	92	76	95	94	99	98	612
Year Q-2	10	62	48	46	54	53	56	44	373
Year Q-3	5	17	6	7	8	9	8	8	69
Total trainee and apprentices	**49**	**138**	**197**	**238**	**260**	**282**	**297**	**291**	**1752**

6.173 As can be seen there is a ***negative adjustment of 167 trainees and apprentices*** over the RIIO-GD1 period, which is due to the phasing issue described in paragraph 6.171.

6.174 The cause of the phasing issue can be seen in figure 6.30 as if year "Q" was just when then workforce renewal requirement could be met then you would expect there to be a "Q-4" for the four year courses where the trainee can not meet the workforce renewal requirement in their final year, as described in paragraphs 6.168 to 6.169.

6.175 The exclusion of a "Q-4" year provides confidence in our assertion that Ofgem has incorrectly assumed that all trainees and apprentices can meet the workforce renewal requirement in the last year of their programme.

6.176 We have notified Ofgem of this error, reference GD1-NGGPh4-20, however in their response they simply refer us to the equation they have used[35] and point us in the direction of their iteration process[36], which is irrelevant due to the omission of our Maintenance 2 year programme and the assumption used in calculations

[35] RIIO-GD1: Initial Proposals – Supporting document – Cost efficiency, Appendix 7, 1.3
[36] "Sensitivity_Analysis" file, "Qualifiers_Matched_Sensitivity" row 85 to row 10184

that all trainees and apprentices can fill the workforce renewal requirement in the final year of their course.

6.177 We trust that the more detailed description of the error provided above will enable Ofgem to correct their calculations and, therefore, the numbers of trainees and apprentices allowed.

Locked Formula Error

6.178 There is also an error in Ofgem's calculations[37] that result in another ***negative adjustment of 25 trainees and apprentices***. It appears that the formula used has been "locked", using the "$" function, on both sides of the formula in error. This results in our submitted numbers of trainees and apprentices by our individual networks in each year continuing to be divided by the sum of all of our networks in the year 2014, rather than the appropriate year. The percentages Ofgem reach from these incorrect calculations are then used to create the next step of our headcount disallowance. Figure 6.31 below shows the different headcount disallowance numbers used by Ofgem on the same worksheet[38].

Figure 6.31 – Ofgem trainee and apprentice headcount adjustment variance due to identified error

	2014	2015	2016	2017	2018	2019	2020	2021	Total
Ofgem Headcount Adjustment Source 1									
NGGD	**-95**	**-51**	**-22**	**-7**	**-14**	**8**	**9**	**3**	**-167**
Ofgem Headcount Adjustment Source 2									
East of England	-47	-32	-15	-5	-11	6	7	2	-93
London	-19	-12	-5	-2	-3	1	3	1	-35
North West	-19	-15	-8	-3	-7	4	5	2	-40
West Midlands	-10	-8	-6	-2	-6	3	3	1	-24
NGGD	**-95**	**-67**	**-34**	**-11**	**-26**	**15**	**18**	**7**	**-192**
Variation between Ofgem Numbers	**0**	**-16**	**-12**	**-5**	**-12**	**7**	**9**	**3**	**-25**

Nb. Source 1 is "Recruitment_Adjustments" file, "Workforce_Renewal_Assessment" worksheet, sum of cells B8-I8 + B9-I9 + B10-I10 + B11-I11
Source 2 is "Recruitment_Adjustments" file, "Networks_Adjustment_Total" worksheet, sum of cells B8-I11

6.179 Figure 6.31 shows that the headcount adjustment is the same between the two sources in 2014 and varies in all subsequent years, as would be expected when the error described in paragraph 6.178 locks the calculation to divide by the sum

[37] "Recruitment_Adjustments" file, "Workforce_Renewal_Assessment" worksheet, cells C33-I33, C34-I34, C35-I35 and C36-I36
[38] "Recruitement_Adjustments" file, "Workforce_Renewal_Assessment" worksheet. Variation between the sum of cells B26-I26 (NGGD) and the sum of cells B8-I11 (by individual NGGD network)

of our submission in 2014. This formula error also negatively impacts one other network company.

Headcount Calculation Error

6.180 After Ofgem has applied their adjustment for under-recruitment during RIIO-GD1, discussed in section B, the overall headcount adjustment is 511[39] (plus 126 due to omission of Maintenance 2 year programme), however when Ofgem apply this over to their next supporting document, which calculates allowance, it becomes 478[40] (plus 126), ***a positive adjustment of 33 trainees and apprentices***, due to a further calculation error.

6.181 The calculation error is due to Ofgem dividing the headcount adjustment by NGGD's actual submitted headcount (1,920) to create a set of adjustment percentages in one source. They then use these percentages in their next supporting document but apply them to our submitted headcount minus our Maintenance 2 year programme that was omitted in error, thus reaching a new further set of incorrect headcount adjustment numbers.

B. *Adjustment for under-recruitment during GDPCR1*

6.182 The one area of Ofgem's training and apprentice Initial Proposals where the headcount adjustment is transparent is for the under-recruitment of trainees and apprentices by GDNs during GDPCR1.

6.183 For NGGD Ofgem show, in their Initial Proposals[41], an under-recruitment of 319 trainees and apprentices during GDPCR1. This is validated by their calculations in the supporting documents provided[42].

6.184 However, we oppose this proposed claw-back of under-recruitment during the present control period on three main grounds:

i. It is asymmetric – NGGD overspent on Training and Apprentices in the years 2004/05 – 2007/08 (c. 450 FTE) but did not receive any additional allowances ex post – although it did not expect to receive any as this would have represented re-opening the price control. The number of apprentices recruited in 2007/08 was 156, with more than 100 FTE being taken on in each of the three years prior to this.

ii. It represents retrospective regulation, an effective re-opening of the GDPCR1 price control outcome, which only acts to increase regulatory uncertainty, and

[39] "Recruitment_Adjustments" file, "Networks_Adjustment_Total" worksheet, sum of cells B8-I11
[40] Allowance_Training_Apprentice" file, "Recruit_Adjust_Craftsperson", "Recruit_Adjust_Engineer" and "Recruit_Adjust_Graduate" worksheets.
[41] RIIO-GD1: Initial Proposals – Supporting document – Cost efficiency, Appendix 7, Table A7.1
[42] "Recruitment_Adjustments" file, "GD_EoE_Collated", "GD_Lon_Collated", "GD_NW_Collated" and "GD_WM_Collated" worksheets, cells B8-J8

so add to the cost of capital. In GDPCR1, in the round, there were no clauses on individual items so imposing them retrospectively is wrong.

iii. Retrospective regulation is a breach of the commitments made by Ofgem in the RIIO Handbook. Paragraph 5.6. states that *"Network company decisions will be influenced by their perceptions of the credibility of the regulatory framework. The RIIO model is designed to provide certainty and transparency about how the framework will work in the future. As part of this, we will seek to avoid any retrospective/ex post adjustments to the package agreed in final proposals and licence modifications as this could undermine regulatory commitment."*

6.185 In summary we strongly disagree with the application of this claw-back on a number of grounds. We can also demonstrate that any under-recruitment during GDPCR1 is more than cancelled out by NGGD's over-recruitment prior to GDPCR1.

Headcount Adjustment Conclusion

6.186 Figure 6.32 below shows a complete trace of the trainee and apprentice headcount adjustments from our submission to Ofgem's Initial Proposals.

Figure 6.32 – Ofgem trainee and apprentice headcount adjustments trace

Area of Headcount Adjustment	Headcount Adjustment	RIIO-GD1 trainee and apprentice numbers
NGGD April Submission	n/a	1,920
Omission of Maintenance 2 year programme	-126	1,793
Incorrect assumption that all trainees meet requirement in last year of programme	-167	1,626
Formula Error	-25	1,601
Calculation Error	33	1,634
Claw-back	-319	1,315
Initial Proposals	**-604**	**1,315**

6.187 As we have demonstrated in Sections A and B the **headcount allowance proposed in Initial Proposals is incorrect and should be the same as we submitted in April**.

C. *Unit Cost Calculation*

6.188 In their Initial Proposals Ofgem has proposed a unit cost per trainee / apprentice of £35,000 per annum to meet the staff and training costs of each trainee / apprentice.

6.189 They have also proposed an additional allowance for each GDN of £0.5m per annum to cover all additional training costs, including the administrative costs associated with trainees and apprentices, other initiatives to address a GDNs skills shortage and the ongoing competency training for existing gas engineers.

6.190 A breakdown of network companies submitted costs associated with training and apprentices are shown in figure 6.33 below. This table shows how areas of companies submissions map to the elements of Ofgem's allowances. As can be seen NGGD submitted the lowest, average GDN, costs for all training and apprentice activities, even though [redacted] (and possibly [redacted] and [redacted]) appears to have submitted a large proportion of these costs elsewhere in their plan.

Figure 6.33 – Breakdown of costs into Ofgem allowance areas

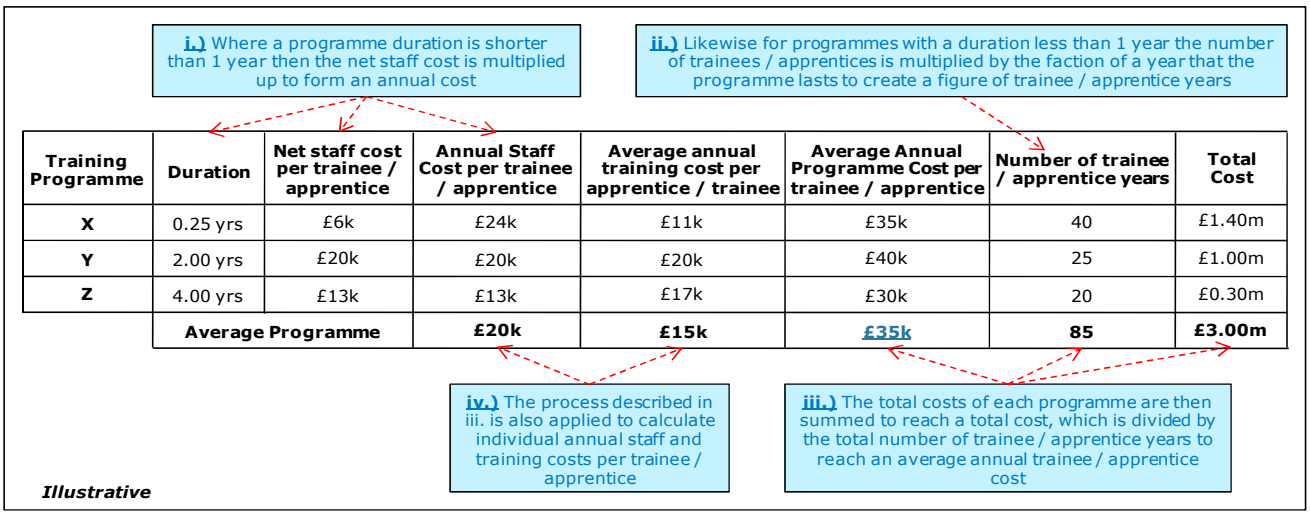
	NGGD	NGN	SGN	WWU	Ofgem
Trainee / Apprentice Total RIIO-GD1 Staff Costs, £m	36				Ofgem has allowed an annual unit cost of £35,000 per trainee / apprentice for these two elements
Total RIIO-GD1 Trainee / Apprentice Training Costs, £m	41				
Costs attributable to other initiatives to address skills shortage and training / apprentice admin costs, £m	8				Ofgem has allowed an annual additional allowance of £0.5m per GDN for these two elements
Total RIIO-GD1 Ongoing Engineer Competency Training Costs, £m	28				
Total RIIO-GD1 Costs Associated with Training and Apprentices, £m	112				Ofgems approach does not adequately reflect that NGGD submitted the lowest cost per GDN. [redacted]
Average GDN RIIO-GD1 Costs Associated with Training and Apprentices, £m	28				

Assessment of Initial Proposal Unit Cost Methodology

6.191 We believe Ofgem has reached an annual unit cost of £35,000 per trainee/apprentice by just taking GDNs submitted individual programme costs[43], where the programme lasts less than a year (Craftsperson A and C) multiplying up the staff cost element to equate a whole years salary, then multiplying the annual programme costs by the number of trainee/apprentice years requested for each individual programme[44] and then dividing by the total number of trainee/apprentice years requested by all GDNs, an illustrative example is shown in the first table of figure 6.34 below.

[43] Taken from worksheet "2.8a A&T Programmes" of our data table submissions
[44] Taken from worksheet "2.8b A&T Numbers" of our data table submission

Figure 6.34 – Simplified illustrative example of how Ofgem has calculated annual unit cost per trainee / apprentice



Training Programme	Duration	Net staff cost per trainee / apprentice	Annual Staff Cost per trainee / apprentice	Average annual training cost per apprentice / trainee	Average Annual Programme Cost per trainee / apprentice	Number of trainee / apprentice years	Total Cost
X	0.25 yrs	£6k	£24k	£11k	£35k	40	£1.40m
Y	2.00 yrs	£20k	£20k	£20k	£40k	25	£1.00m
Z	4.00 yrs	£13k	£13k	£17k	£30k	20	£0.30m
	Average Programme		**£20k**	**£15k**	**£35k**	**85**	**£3.00m**

6.192 It appears that Ofgem has used the average of the GDNs submitted programme costs because this creates a lower unit cost than if they had chosen to use the upper quartile (second network company).

6.193 The methodology Ofgem has used to create this annual unit cost is incorrect and unfair in a number of ways:

- It should use the costs from each GDNs data table 2.8[45], instead of from their 2.8a data tables
  - Demonstrated by a huge variance in [redacted] costs between data tables 2.8 and 2.8a which appears to be omissions in training costs on 2.8a. Table 2.8a shows [redacted] "Engineer Apprentice Programme 1 – Network Services" as having a total annual cost of £10,300 which seems extremely low and requires sense checking
- Ofgem's methodology is also distorted by [redacted] submitting a much lower average annual trainee/apprentice cost than other GDNs
  - Which we believe is only possible because their average programme length is much longer, twice that of NGGD's, so they can smear training costs across a longer period.
  - There is also a discrepancy between the length of [redacted] training programme published in their Well Justified Business Plan and what is used in their data tables to calculate allowance.
- In creating the annual unit cost in this way, using costs from data table 2.8a of GDNs submissions, we believe Ofgem has not fully considered all submitted staff and training costs and as such have not achieved their stated aim.

[45] These costs should be from GDN data table 2.8, calculation = (sum(N14:U14) + sum(N25:U25) + sum(N36:U36) + sum(N45:U45))

- When the correct levels of submitted costs are included the **average annual unit cost per trainee/apprentice is around £43,000[46].**

- The methodology used by Ofgem completely ignores the actual output from the training and apprentice process, qualifiers, when setting allowances. No consideration is given whatsoever to the cost of a total programme from a recruit starting a course to fulfilling the workforce renewal requirement.

  - Ignoring this unfairly penalises NGGD as we have submitted the lowest average cost per qualifier across our submitted suite of trainee and apprentice programmes out of all GDNs.

  - Using the Initial Proposals supporting calculation files provided by Ofgem we calculate that our networks are the four cheapest in terms of average cost per qualifier and that the next GDN, [redacted], is over 30% more expensive per qualifier than NGGD's average cost.

  - Overall Ofgem's methodology rewards, the more expensive, [redacted] by allowing them 18% more per qualifier than they have requested whilst penalising the least expensive company per qualifier, NGGD, by cutting their cost per qualifier by 18%.

6.194 Figure 6.35 demonstrates the approach Ofgem has taken in setting unit cost and highlights the impact it has on the amount allowed per qualifier. This categorically demonstrates that Ofgem must change their methodology for calculating a GDNs allowance so not to penalise the GDNs meeting their workforce renewal requirements in the most efficient way.

Figure 6.35 – Ofgem Initial Proposals Unit Cost Position

	NGGD	NGN	SGN	WWU	Ofgem IP Position
Training/Apprentice Years Submitted	1795				Accepted *(but errors and claw-back reduce*)*
Average Training Years Per Qualifier	2.10				Accepted *(GDN average*
Pro-rated RIIO-GD1 Qualifiers	**856**				**Didn't Consider when calculating unit cost**
Average Training Year Cost Submitted (£'k)	43				Set unit cost at £35k *(GDN average*
Average Cost per Qualifier (£'k)	**90**				**Didn't Consider** *(GDN average*
Initial Proposals cost per qualifier (£'k)	73				Ofgem approach cuts frontier company by 18% &

*As demonstrated in sections A and B

[46] Uses costs from table 2.8 from calculation (sum(N14:U14) + sum(N25:U25) + sum(N36:U36) + sum(N45:U45)) and number of trainees/apprentice years calculated from data table "2.8b A&T Numbers" from individual network BPDT Source Sheets

Proposed Unit Cost Methodology

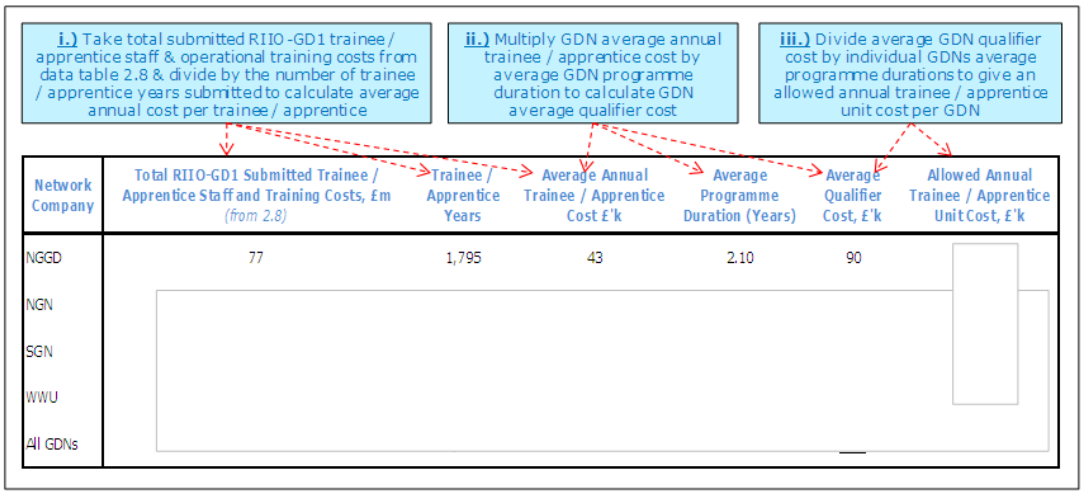
6.195 Two methodologies to create an average GDN cost per qualifier and then individual GDN annual trainee / apprentice allowance are set out below.

6.196 Both methodologies reach the same conclusions, as such we have no preference as to which is used. Alternatively they could both be used to provide a sense check when creating allowances.

a) *Using number of trainee / apprentice years*

- In this approach an average annual GDN trainee/apprentice cost is created first, as shown in figure 6.37 below
- This is then multiplied by the average GDN trainee/apprentice programme duration to calculate an average GDN cost per qualifier
- This average cost per qualifier is then divided by each GDNs average programme duration to give an annual unit cost per trainee/apprentice by GDN.

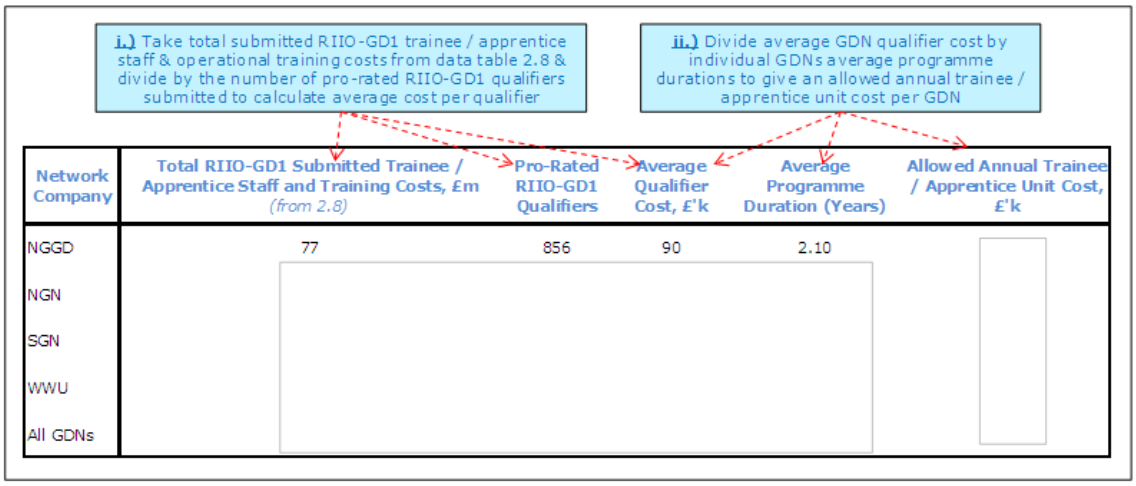
Figure 6.37 – Illustrative description of Methodology A



b) *Using pro-rated qualifier numbers*

- In this approach an average GDN qualifier cost is created first, as shown in figure 6.38 below.
- This is then divided by each GDNs average programme duration to give an annual unit cost per trainee/apprentice by GDN.

Figure 6.37 – Illustrative description of Methodology B



6.197 As can be seen in both methodologies the **average cost per qualifier across all GDNs is around £**[redacted], and the **allowed annual trainee/apprentice unit cost for NGGD should be around £**[redacted] .

6.198 An alternative approach would be to use the network company upper quartile cost per qualifier. This is around £119,000, set by the second most efficient company [redacted] As such the allowed annual trainee/apprentice unit cost for NGGD would be around £[redacted]

6.199 As can be seen NGGD deliver their workforce renewal requirement so efficiently that they make the GDN average qualifier cost lower than the network company upper quartile.

Application of Unit Cost Calculation Error

6.200 Further to the above, in the approach used by Ofgem at Initial Proposals, an error has been made in how the unit cost has been applied to the Engineer Type C programme[47]. Even though this programme is for two years the unit cost has been adjusted as if the programme duration was less than one complete year.

D. *Additional Allowance*

6.201 In addition to the unit cost allowance provided for the staff and training costs for trainees and apprentices, Ofgem have also proposed an additional annual allowance set at £0.5m per GDN to cover other operational training costs including:

- Other initiatives to address skills shortage;
- Administrative costs attributable to apprentices and training; and

[47] "Allowance_Training_Apprentice" file, "Unit_Cost" worksheet, cells B24-K24

- Maintaining the competence levels of the existing workforce.
  - For National Grid, this relates to our 'Competence Assurance Programme (CAP)' for which the context and costs are detailed in our November Submission[48]

6.202 We believe that in deriving the £0.5m per network, Ofgem have not included the costs of our ongoing training requirements of existing employees. We did not include this in the specific apprentice data tables (tables 2.8), but did include it in the overall training and apprentice activity section of the main opex data table (table 2.1).

6.203 This we believe may not be consistent with the other networks.

6.204 Combining these two costs, we then see the additional training costs for NGGD being significantly higher [redacted] on the other hand had no costs.

6.205 These are perhaps due to further classification differences as we cannot see how [redacted] have zero costs of training existing employees. This could well be the case and is an example of one of the inherent problems of bottom-up benchmarking without full investigation of anomalies. It is a cherrypicking example.

Figure 6.38 – Costs to be considered when setting additional annual allowance

	NGGD	NGN	SGN	WWU	Ofgem IP Allowance
Costs attributable to other initiatives to address skills shortage and training / apprentice admin costs, £m	8				
Total RIIO-GD1 Ongoing Engineer Competency Training Costs, £m	28				
Total RIIO-GD1 costs to be considered when setting additonal allowance, £m	36				
Annual cost per GDN to be considered when setting additional allowance, £m	**1.1**				**0.5**

NGGD £1.1m results from:-
Table 2.8 ' Other training and admin costs' (£8m total) - £0.24m per network p.a. = (8÷8÷4=0.24)
Table 2.1 'Ongoing Engineer Competency Training (CAP)' (£28m total*) - £0.88m per network p.a. = (28÷8÷4=0.88)
*Note that this is the difference between the total costs in table 2.8 and total costs in table 2.1 A&T section

6.206 As can be seen the total RIIO-GD1 costs submitted relevant to this additional allowance equals around £8.8m p.a., **which would indicate that an allowance of £1.1m p.a. is more appropriate than the IP allowance.**

[48] A9.1 Resource Strategy – Section 8

Training Facility Capex Allowance

6.207 As outlined in our response to the proposed allowances for 'Other Capex' (Chapter 7 Question 1 - Miscellaneous Capex) we challenge Ofgem's disallowance of our proposed Capex expenditure for provision of a new training facility. It can be seen from the above evidence that NGGD has the most efficient average total Opex cost per qualifier. The allowance should take into account the total cost of training which, including our Capex provision, is an entirely justifiable and efficient level of cost, when considered in the round.

Summary

6.208 **Our review of the IP and the difficulties of the complex analysis and differences in classification and approaches to training of the four companies, NNGD believe that the above analysis confirms that our plan submission was robust and appropriate.**

6.209 NGGD do not believe that it is appropriate for Ofgem to apply a claw-back mechanism for the under-recruitment of trainees and apprentices during GDPCR1 on three grounds:

- It represents retrospective regulation, which only acts to increase regulatory uncertainty, and so add to the cost of capital.
- Retrospective regulation is a breach of the commitments made by Ofgem in the RIIO Handbook.
- It is asymmetric - NGGD overspent significantly on Training and Apprentices from 2004/5 to 2007/8 compared to price control allowances, and received no credit for this.

6.210 Looking a the additional costs of training and normalising NGGD's different classification in the data tables leads to an increase in this element of the allowance

6.211 And with the demonstrated lowest cost per recruit (qualifier) NGGD should be allowed its apprentice costs in full.

6.212 Indeed, depending on whether Ofgem continue to utilise average GDN costs for Training and Apprentices or opt to use the upper quartile company then NGGD's allowance could be higher (NGGD being frontier company).

Figure 6.39 – NGGD allowance based on use of average GDN costs

	Total RIIO-GD1 number of trainees and apprentices	Allowed Annual Unit Cost per Trainee / Apprentice, £'k*	Additional Annual Allowance, £m	Total RIIO-GD1 Allowance, £m	Average Annual Allowance, £m
EoE	799			50	6.3
Lon	271			24	2.9
NW	500			35	4.4
WM	350			28	3.5
NGGD	**1920**			**137**	**17.1**

Nb. Allowed annual unit cost per trainee / apprentice is multiplied by Trainee/Apprentice years and not total number of trainees/apprentices

Figure 6.40 – NGGD allowance based on use of upper quartile company costs

	Total RIIO-GD1 number of trainees and apprentices	Allowed Annual Unit Cost per Trainee / Apprentice, £'k*	Additional Annual Allowance, £m	Total RIIO-GD1 Allowance, £m	Average Annual Allowance, £m
EoE	799			51	6.4
Lon	271			23	2.9
NW	500			35	4.4
WM	350			28	3.4
NGGD	**1920**			**137**	**17.2**

Nb. Allowed annual unit cost per trainee / apprentice is multiplied by Trainee/Apprentice years and not total number of trainees/apprentices

Holder Demolition

(Chapter 4, paragraph 4.33 – 4.38, Table 4.6)

Summary of our Position

6.213 We are pleased that Ofgem have acknowledged the need to address the risk associated with these end of life assets that are no longer operationally required.

6.214 Although NGGD do not fully understand the details of the CBA model developed by Ofgem, the extension of our proposed 12 year programme to the IPs 16 year programme does not seem unreasonable (i.e. demolition of all holders over the next two price controls), as the sensitivity around assumptions driving our model and the differential in the NPV of the two periods is not significant.

6.215 NGGD also note the unit cost allowance of £0.539m per holder, being very close to the plan submission of £0.547m per holder.

6.216 We do however challenge the assumption that all networks get the same unit cost allowance, of £0.5m per holder (with an appropriate London weighting).

6.217 We have provided Ofgem detailed information and analysis to Ofgem using actual costs and detailed condition assessment that shows that the type of holder makes a significant difference to the holder demolition costs. We are therefore surprised that Ofgem states that there is no difference.

6.218 We also know that we have holders of the more expensive type and of larger size (given we owned them prior to Network Sale).

6.219 We believe Ofgem should use the data that has been provided to better assess individual network unit costs and spread the allowance more appropriately across the networks. Given our portfolio of holders, our unit costs are frontier and so should be rewarded given the UQ benchmark.

Justification of Our Position

6.220 Holder demolition costs vary significantly between the different types of holders, when comparing two holders of the same size a column guided holder is more expensive to demolish than a spiral guided holder due to the removal of the support structure. Furthermore, a below ground holder will require the infill of the tank area and is therefore more expensive to demolish than an above ground holder.

6.221 Given concerns over integrity and the security risks they pose, and with the HSE identifying them as a primary risk within the industry's distribution networks, NGGD, as part of our condition risk assessment, has previously had site surveys undertaken by independent technical specialists who confirmed the onset of age related major structural decay and damage to most gasholders. As such our plan was based on individual cost estimates by external consultants for which we know the key drivers of size and type as well as some other individual site circumstances.

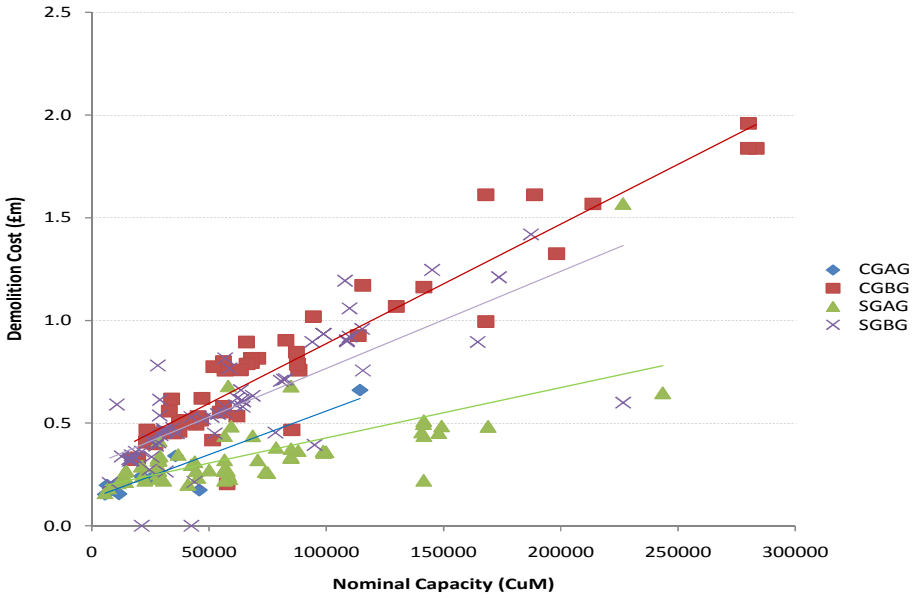
6.222 NGGD submitted summary information on the size/type costs in the November plan submission[49] and gave detailed individual cost by holder in a subsequent Supplementary Question data file[50].

6.223 The table below illustrates the differing demolition cost of holders plotted against the size of the holder. It shows four different holder types

- CGAG–Column guided above ground
- CGBG– Column guided below ground
- SGAG–Spiral guided above ground
- SGBG– Spiral guided below ground

[49] A8.8 Asset Health Expenditure: Section 6
[50] Response for - Cost Visit – Action 25 (attachment: Gas Holders Operational Case (Updated For Ofgem Clarifications) v3.xls)

Figure 6.42 – Holder Demolition Size/Type Unit Costs



6.224 With NGG planning to demolish a varying type of holder fleet, which in comparison to other IDN's have the largest percentage of below ground, Column guided holders, with the largest average capacity (Ref table below) NGGD feel Ofgem have failed to reflect the appropriate unit cost of demolition fairly.

Figure 6.43 – Holder Demolition Size/Type Unit Costs

TYPE	NO	AVG DIAM	AVG COST	AVG COST / AVG DIAM	NORMALISED UNIT COST
CGBG	55	53	0.888	0.017	0.791
SGBG	63	46	0.663	0.014	0.677
SGAG	79	47	0.360	0.008	0.365
CGAG	11	29	0.267	0.009	0.432
TOTAL	208	47	0.586	0.012	0.586

6.225 Ofgem recognise in paragraph 4.36 that the cost of holder demolition varies by size and, to a lesser extent, type. As illustrated in the above table, NGGD does not share that assertion, type does have a material impact on the cost of demolition. e.g. below ground is 45% higher in cost than above ground and column guided is 15% more expensive than spiral guided for the same tank type.

6.226 NGGD have knowledge of the size and type of the other companies holders and the limited demolition work undertaken since network sales. As seen from the table below, NGGD have the largest holders, and the highest population of the higher cost holders i.e. below ground and column guided holders.

Figure 6.44 – Estimated Profile of GDN Holder Demolition Cost Factors

Network	%age below ground	%age column guided	Average capacity
SGN			
NGN			
WWU			
NGGD	56%	30%	67,500
EoE	20%	23%	55,000
NL	78%	39%	82,000
NW	73%	26%	55,000
WM	55%	55%	196,000

6.227 Therefore we do not agree with the statement in paragraph 4.37 that *"we did not find evidence that GDNs have significantly different portfolio of holders".*

6.228 NGGD believe Ofgem have the information required to analyse and give more appropriate unit costs of demolition across the networks and urge Ofgem to use the data that has been provided to better assess individual network unit costs and spread funding more appropriately across the networks.

Land (Statutory) Remediation

(Chapter 4, paragraph 4.41 – 4.42)

Summary of our Position

6.229 The IP do not set land remediation allowances anyway near the level required to fulfil our environmental obligations. Indeed given the similar nature of the environmental risks across networks it is not reasonable to allow other networks between 375% and 550% more than NGGD.

6.230 This is especially surprising given that alone among the companies we have fully spent our allowance within GDPCR1 (note, we prioritised spend according to risk across our networks) and this is one of the few areas where Ofgem had previously stated that clawback of underspend could occur.

6.231 We stress that our submission is driven by and purely relates to statutory requirements – not the additional remediation required to clean land prior to sale.

6.232 Not allowing statutory remediation on sites with holders is also at odds with precedents of former price controls and Ofgem's guidance to buyers during Network Sales.

6.233 The unbalanced outcome results from a difference in interpretation in completing a data table by different network companies and the subsequent lack of any clarification. We showed our total site remediation against sites where there are holders. The evidence suggests that other networks showed none because the environmental risk was not from holders themselves. The difference in interpretation is evidenced by the fact that the other companies plans ask for 17 times their annual spend in the first three years of GDPCR1. Why should there be any change in the level of spend if sites where there are holders are not included in their place.

6.234 Contamination on gas holder sites (and hence our submission) relates to wider site issues flowing from sources other than the standing holder structures themselves – holders themselves were typically built on what was clean land.

6.235 The Initial Proposals state that statutory remediation for holder sites can be treated as a cost of sale. By extension this means that remediation would only take place where there is an active market for a site, and that there would no driver to remediate sites that are not commercially viable in a situation where a risk driven programme is not supported.

6.236 Ofgem have proposed some form of "efficient unit costing" for statutory remediation. Given the high degree of variability of site level conditions, we consider this to be impracticable.

6.237 Loss of funding for statutory environmental remediation would force a reactive strategy versus a history of proactivity in this area, undoubtedly highly damaging to the reputation fostered with environmental agencies and local authorities. It is also at odds to the precedents of former price control periods, and our

commitment to statutory remediation in the current price control has been clearly demonstrated.

6.238 **Given the evidence provided in the business plans, the above clarification (of the basis of our submission and justification for necessary increase from recent actual spend), and the fact that our four networks on average seek the least cost, together with , of the four companies we submit that our plans for land remediation should be accepted in full.**

Justification of Our Position

6.239 Following receipt of RIIO GD-1 initial proposals from Ofgem, we are concerned that the submission in relation to statutory remediation of gas holder sites has been misinterpreted and the resultant allowance are not sufficient for NGGD to carryout its environmental obligations.

6.240 As illustrated in the figure below, our plan submission was, on average the least cost submission, along with NGN. However, the Initial Proposals cut our plan by nearly 75% whilst not touching two of the other companies.

Figure 6.45 – Land Remediation – Per Network

£m pa	Plans(i)	IP	Change	
NGGD	1.5	0.4	-1.1	-73%
NGN				
SGN				
WWU				

(i) includes holder site and non-holder site remediation

6.241 Ofgem state that *"NGGD and WWU included land remediation costs associated with their gasholder demolition. Based on evidence from the other GDNs we think that these costs are not required."* This was based on evidence of a data table, which we believe is a misunderstanding of Ofgem.

6.242 What is surprising is that given the overall similarities that networks face, the resultant allowances have such dramatic difference, with NGN receiving 375% more than an NGGD network, through to [redacted] getting 550% more!

6.243 This is a clear example of poor 'light touch' assessment, with no sense check of the results and disappointingly no consultation with NGGD to check what could be (and is we believe) a difference in interpretation on filling out a data table and not a justifiable disallowance.

6.244 This response seeks to discuss the following areas:

- clarification on the content of NGG's submission in respect of statutory remediation of gas holder sites
- issues with proposed adoption of unit costing for statutory remediation
- general challenges faced by NGG in managing environmental contamination
- consistency of treatment for statutory remediation costs against previous price control periods, and between NGG and the other GDNs

Clarification of submission for statutory remediation

6.245 The NGG submission in respect of statutory remediation differentiated between requirements for gas holder sites and non-gas holder sites. The aim of this was to assist Ofgem in understanding the general increase in statutory remediation costs against historical levels of expenditure rather than to make a distinction between different types and natures of cost.

6.246 Both elements of the combined submission for statutory remediation were derived from NGGD's environmental provision which is primarily valued through consistent detailed quantification by external environmental consultants.

6.247 Holder sites represent more than 65% of the closing 11/12 site specific environmental provision (see Appendix 3). This is sites to which holders are present and not pure holder site or in anyway meant to mean the decontamination for holders – which is the misunderstanding of Ofgem.

6.248 The element of the submission in respect of gas holder sites reflects known contamination across the wider site rather than relating specifically to the standing gas holder itself.

6.249 For clarity, the costs of dewatering, removal of material from within the holder tanks and infilling of the void are included within the costs of holder demolition submitted, and are not part of the submission for statutory remediation.

6.250 Generally, contamination is caused by the presence of former gas works structures under ground rather than by a standing gas holder itself. We have encountered significant sources of contamination flowing from former gas holder that were demolished at a time when environmental considerations were undeveloped. Typically, these were in-filled with gas works process wastes and by-products and other poor quality materials.

6.251 It is possible that such sources of contamination could be present in close proximity to a gas holder, posing a significant challenge in fully remediating a site.

6.252 The presence of gas holder structures on sites constrains our ability to address environmental contamination issues across the wider site. Remediation often involves excavation at depth, and if this were required in close proximity to the holder, structural integrity could be compromised. Removal of the holder structure therefore enables efficient, durable and safe remediation of known contamination.

6.253 The presence of active operational gas holders has acted as a defence to environmental regulators in addressing durable statutory remediation at these locations. However, such a stance simply results in protracted management and mitigation solutions which in themselves do little but defer the issue, and at best prevent worsening of contamination. Furthermore, because the holder fleet is now deemed operationally redundant, this line of defence is lost.

6.254 To help better illustrate the challenge, Appendix 1 shows example site plans for 4 gas holder sites (one per NGGD network) prepared by external environmental consultants. These demonstrate two key points:

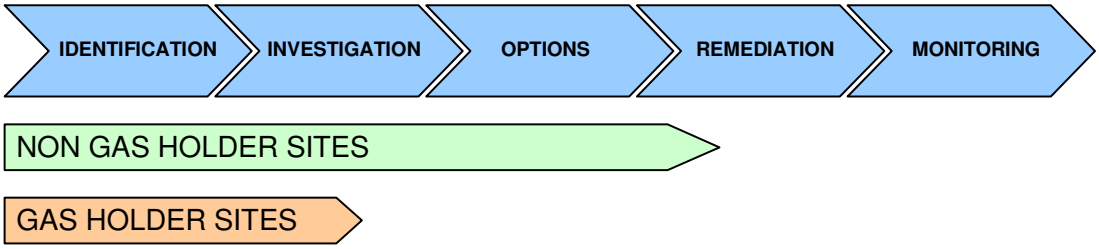
- that environmental contamination on a gas holder site is generally not caused by the holder itself
- environmental contamination affects the wider site, not just the immediate area around the gas holder.

6.255 More examples can be provided if required.

6.256 Because holder demolition unlocks the ability to remediate the wider site, our total submission for statutory remediation costs is higher on average than levels of expenditure in the current price control period.

6.257 The inability to remediate gas holder sites historically means that we have been unable to progress this element of our statutory environmental provision to the same extent as non-holder sites. The diagram below attempts to illustrate this:

Figure 6.46 – Land Remediation



6.258 Our submission for statutory remediation is also reflective of a programme of holder demolition across two price control periods, and that remediation cannot be fully addressed until the structures are removed.

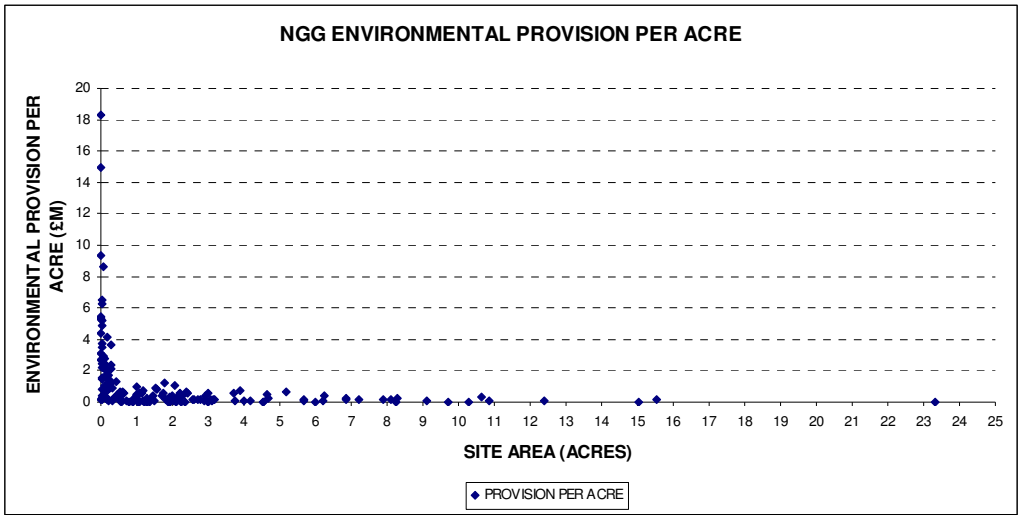
6.259 The initial proposals imply that statutory remediation for holder sites be treated as a cost of sale. By extension this means that remediation would only take place where there is an active market for a site, and that there would no driver to remediate sites that are not commercially viable in a situation where a risk driven programme is not supported.

Issues posed by adoption of unit costing for statutory remediation

6.260 Ofgem's initial proposals give reference to the establishment of an "efficient unit cost" for statutory remediation.

6.261 NGG's portfolio of sites range in size from 0.007 acres to over 23 acres. The high degree of variability in site area is coupled with equal disparity in the environmental provision per acre. The scatter graph below demonstrates this point:

Figure 6.47 – Land Remediation



6.262 The main reasons for such site level variability are:

- contamination is a three dimensional issue, with a high degree of variability in area and depth of contamination from site to site
- concentrations of contamination will vary greatly, and a site may have multiple sources of contamination
- contamination does not uniformly affect a site; in some instances it may be reasonably contained, and in others a site suffers from multiple "hot spots"
- The nature of contamination may require specific remediation methodologies which are variable in cost
- Remediation standards are risk-based and vary depending on geology, use of site, water table depth, proximity of rivers, and historical land uses and management practices
- Sites will be at different stages in their remediation life cycle ranging from initial desktop risk evaluation to partial or full remediation, depending on risk appraisal of site specific conditions

6.263 Appendix 2 contains example conceptual diagrams prepared by external environmental consultants to illustrate the points above. More examples can be provided if required.

6.264 We consider that site level variability, and the need to work on a risk prioritised basis make unit costing impracticable. Indeed this is something both industry experts and environmental agencies have tried to establish in the past with no success. Any allowance provided on an assumed unit cost basis would not appropriately reflect the nature of the activity.

General Challenges in managing environmental risk

6.265 We would like to stress that the funding we requested was for statutory remediation. This means the minimum remediation required in order to ensure that a site does not meet the definition of statutorily identifiable Contaminated Land. Section 78A of the Environmental Protection Act 1990 (EPA), defines Contaminated Land as follows:

> *"by reason of substances in, on or under the land, that –*
>
> *(a) significant harm is being caused or there is a significant possibility of such harm being caused; or*
>
> *(b) pollution of controlled waters is being, or is likely to be, caused"*

6.266 While the government wishes to promote voluntary remediation by landowners, where the above definition is met, the EPA places obligations on local authorities and the Environment Agency to secure appropriate remediation through regulatory action, including remediation notices.

6.267 National Grid adopts a proactive and risk prioritised approach to managing its largely inherited environmental liabilities to avoid being subject to regulatory action.

6.268 Statutory remediation does not include remediation for the purposes of future potential land uses. Any additional remediation activities over and above statutory remediation are met from the proceeds of land sale and are not included in our RIIO GD-1 submission.

6.269 The RIIO GD-1 initial proposals provide unclear guidance on the degree of funding to be provided for statutory remediation. Loss of regulatory funding in this area would force a more reactive approach, and result in reputational damage across our stakeholders, particularly with the Environment Agency and Local Authorities with whom many years of goodwill have been fostered.

6.270 The table in Appendix 3 seeks to summarise the challenge faced by NGG with regard to environmental contamination.

6.271 We aim to incrementally reduce our environmental liabilities through a risk prioritised programme, and our submission is reflective of this approach. Indeed, we expect to still be holding significant environmental provisions at the end of RIIO GD-1, in all likelihood in excess of £50m in undiscounted terms.

6.272 We also consider that we have demonstrated our commitment to environmental issues in the current price control period as evidenced by our performance against regulatory allowances:

Figure 6.48 – Historical Environmental Spend

ENVIRONMENTAL SPEND - 10/11 PRICES

ACTUAL / FORECAST SPEND

£m	2008/9	2009/10	2010/11	2011/12	2012/13	TOTAL
EAST	0.5	0.6	0.3	0.9	1.1	3.5
LONDON	0.8	0.1	0.8	2.4	1.1	5.3
NORTH WEST	1.1	1.2	5.4	4.0	1.1	12.8
WEST MIDLANDS	0.2	0.2	0.6	0.4	1.1	2.7
TOTAL NGG	**2.7**	**2.2**	**7.2**	**7.7**	**4.4**	**24.3**

ALLOWANCES

£m	2008/9	2009/10	2010/11	2011/12	2012/13	TOTAL
EAST	1.2	1.3	1.6	0.7	0.7	5.5
LONDON	1.2	1.3	1.6	0.7	0.7	5.5
NORTH WEST	1.2	1.3	1.6	0.7	0.7	5.5
WEST MIDLANDS	1.2	1.3	1.6	0.7	0.7	5.5
TOTAL NGG	**4.7**	**5.2**	**6.6**	**2.8**	**2.8**	**22.0**

PERFORMANCE AGAINST ALLOWANCES

£m	2008/9	2009/10	2010/11	2011/12	2012/13	TOTAL
EAST	0.6	0.7	1.3	-0.2	-0.4	2.1
LONDON	0.3	1.2	0.8	-1.7	-0.4	0.2
NORTH WEST	0.0	0.1	-3.8	-3.3	-0.4	-7.3
WEST MIDLANDS	0.9	1.0	1.0	0.3	-0.4	2.8
TOTAL NGG	**1.9**	**3.0**	**-0.7**	**-4.9**	**-1.6**	**-2.2**

KEY *LATEST FORECAST VALUES, NETWORK SPLIT TBC*

Consistency of treatment vs. previous price controls

6.273 NGG were awarded regulatory allowances for statutory remediation in the current price control period, and these have enabled a significantly enhanced understanding of our environmental liabilities, and targeted reduction to overall levels of risk.

6.274 In addition to the arguments already put forward, a potential loss of regulatory funding for statutory remediation would risk severing an in-flight programme of environmental risk reduction.

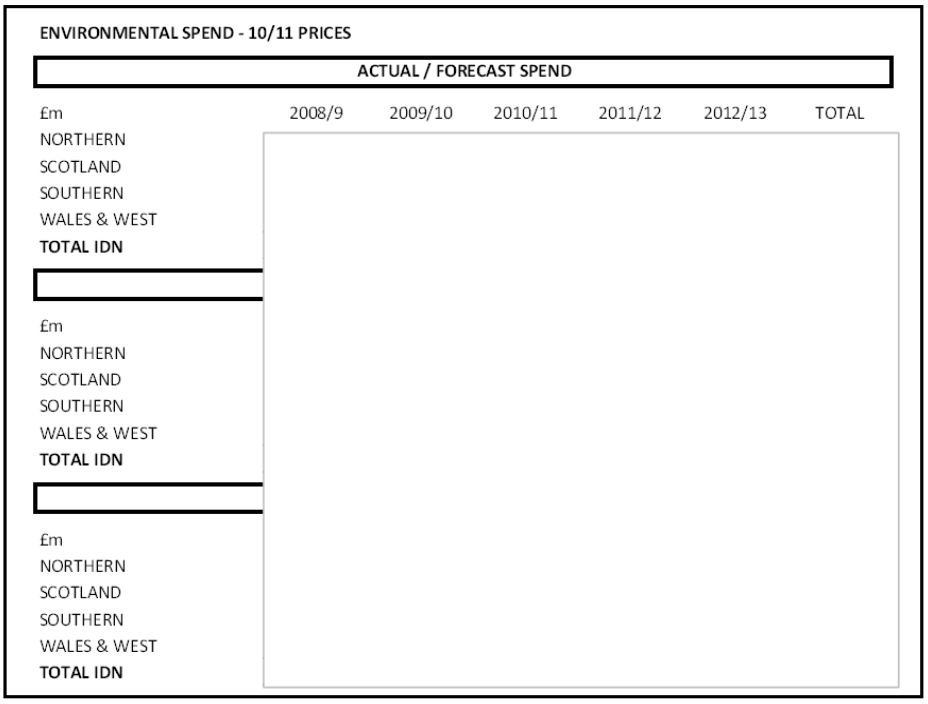
6.275 We feel that such a loss of funding in RIIO GD-1 would be counter to the precedents set in previous price control periods. In a communication from Ofgem regarding the *"environmental liabilities of Transco's regional gas distribution network businesses"* dated July 2004, the following statement is made:

"For price control purposes, it has in the past been accepted that appropriate allowance should be made for the efficient level of costs of cleaning up contaminated land occupied for a purpose of the regulated business which are expected to be faced by a licence holder in the period of the control."

Consistency of treatment against other networks

6.276 As noted above, we believe that our commitment to environmental remediation has been clearly demonstrated in the current price control period. With Wales and West as an exception, this is in contrast to the other IDNs whom appear to have achieved very little in this area:

Figure 6.49 – Historical Environmental Spend – Other Networks



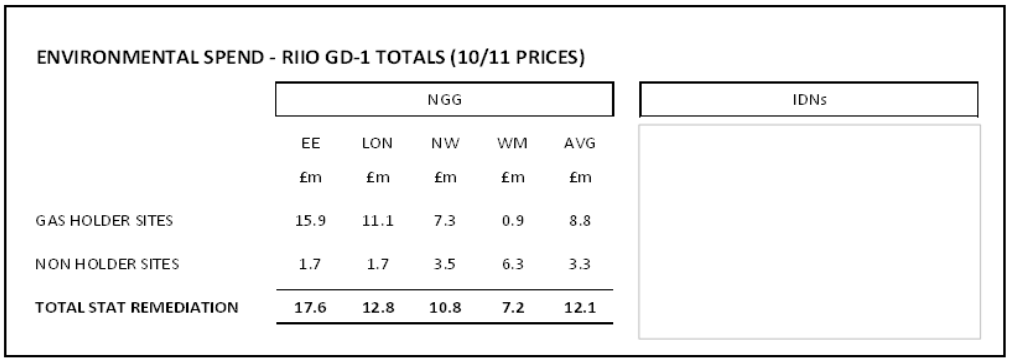
6.277 In the same Ofgem communication mentioned above, it is noted that:

"Where under-spend results from delivery of fewer outputs, it would be off-set against the cost of delivering the shortfall in future periods. This is consistent with the usual approach to costs necessarily incurred in the conduct of a regulated business".

6.278 This can be distinguish from the situation with Training and Apprentices where there was no mention of clawback of any underspend at network sale or in the setting of GDPCR1 which was a price control accepted in the round.

6.279 Furthermore, a network by network comparison of the RIIO GD-1 submission for environmental costs shows that the NGG proposal is on average lower than that of the other networks:

Figure 6.50 – RIIO-GD1 Plan Submissions



ENVIRONMENTAL SPEND - RIIO GD-1 TOTALS (10/11 PRICES)

	NGG					IDNs
	EE	LON	NW	WM	AVG	
	£m	£m	£m	£m	£m	
GAS HOLDER SITES	15.9	11.1	7.3	0.9	8.8	
NON HOLDER SITES	1.7	1.7	3.5	6.3	3.3	
TOTAL STAT REMEDIATION	**17.6**	**12.8**	**10.8**	**7.2**	**12.1**	

6.280 The level of spend proposed by the other networks might suggest that these also include remediation of gas holder sites, and it can be assumed that gas holders have historically constrained remediation activity in the same way as experienced by NGGD, given that these assets were under NGGD's ownership pre-network sale.

6.281 We have sought to tie remediation spend into defined secondary output deliverables which show the impact of planned spend against a diminishing list of un-remediated sites as our programme progresses. Whilst it may be required to further develop suitable output measures across NGG and the other networks, our analysis shows that two of the other networks appear to have done less in the way of relating planned spend to specific outputs.

Summary

6.282 We request Ofgem to consider the points contained with this response, and reassess our submission for environmental remediation accordingly, with particular attention to the following key points:

- our request for statutory environmental remediation should be viewed as the total of the requests for holder and non holder sites.
- statutory remediation of holder sites has been prevented historically by the presence of the holder structures, and the structures themselves are not the source of contamination.
- our submission reflects incremental risk reduction on a prioritised basis, and phased remediation at site level depending on the risks presented
- the degree of site level variability makes high level average unit costing entirely inappropriate, especially an approach based on site area.
- statutory environmental remediation is a three dimensional and non-linear challenge, and phased delivery based on risk prioritisation makes it difficult to say with certainty a volume to be remediated at each stage. An output measure based on tracking reductions in risk category at site level is probably most appropriate, and has the best fit with our approach to delivery.

6.283 **Given the evidence provided in the business plans, the above clarification (of the basis of our submission and justification for necessary increase from recent actual spend), and the fact that our four networks on average seek the least cost, together with , of the four companies we submit that our plans for land remediation should be accepted in full.**

Appendix 1a

Appendix 3:

Chapter 7 - Capital expenditure

Question 1: Do you agree with the assessment we have carried out and the results proposed for Capex?

Overview of our Position

7.1 We welcome large aspects of Ofgem's capex assessment, in particular the asset integrity assessment which recognises the detail contained within our business plan and results in no disallowance of proposed workloads (notwithstanding our concerns on opex NRMP as detailed in our response - Chapter 6 Question 1, Maintenance section).

7.2 There are however key areas which have experienced significant disallowances, namely LTS diversions, Security, Vehicles, IS Capex and Land and Buildings. In total this equates to underfunding of NGGD's capital requirements by £20.5m pa, given the submission for our 4 networks was over £100m lower p.a. than that of the other networks. This raises questions over the application of the Totex approach and the danger of cherry picking. In this response we have addressed these issues in turn through either:

- Restating our plan proposals where we do not believe adequate consideration of the evidence already provided has been given.
- Modelling errors and addressing the resultant cherry picking of specific allowances as evidenced through examining relative GDN allowances.
- Supplying further information where applicable.

7.3 The key issues and reasoning for these concerns are as follows:

- LTS Diversions (£3m pa lower than plan) has been adjusted to GDPCR1 average spend. This does not consider the prevailing economic conditions throughout GDPCR1 and the changes we anticipate driven by the wider economic recovery over RIIO-GD1. We have provided further evidence to support this view which outlines the volume of new request we have received for work within the RIIO-GD1 period.

- Security spend (£2.2m pa lower than plan) has been adjusted to reflect the average forecast of the other networks. This does not recognise the network specific nature of this workload or give adequate consideration to the detailed evidence we provided in our business plan.

- Vehicles spend (£2.9m pa lower than plan) has been set at GDPCR1 levels assuming a 5 year replacement cycle. This does not adequately consider the way in which we have optimised our vehicle spend on a totex basis or the replacement cycle of vehicles spanning greater than 5 years.

- IS Capex (£12m pa lower than plan) assessment that gives NGGD less capex than [redacted] despite having twice the number of networks with the underlying methodology being contrary to network sale policy.

- Land and Development (£0.4m pa lower than plan) has had the spend for a new training facility disallowed on the basis these costs are included in our opex allowance for training and apprentices. This does not consider the cost benefit we put forward to support this investment that results in overall lower totex costs for our consumers.

7.4 The follow sections in the response to this question provide more detailed explanation of our position and the justification for our stance.

LTS Non Rechargeable Diversions

(Initial Proposals – Supporting document –Cost Efficiency, para 7.11 – 7.13)

Summary of our Position

7.5 Ofgem have disallowed £3m pa, 78% of our forecast expenditure, for non rechargeable LTS diversions, basing allowances on GDPCR1 average spend. We do not agree with this assessment for 2 reasons:

- Firstly, we do not recognise the GDPCR average spend that our networks have been allowed. We believe the GDPCR1 average is £0.7m pa higher.
- Secondly, this does not consider the prevailing economic conditions throughout GDPCR1 and the changes we anticipate driven by the wider economic recovery over RIIO-GD1. We have provided further evidence to support this view which outlines the volume of new request we have received for work within the RIIO-GD1 period.

7.6 Ofgem should consider the new evidence we have provided that validates the increase in work we forecast in our RIIO-GD1 business plan. We believe this supports our plan volumes and therefore we should have our forecast allowed in full as the current level of allowance will not be sufficient to enable NGGD to discharge its obligations.

Justification of our Position

7.7 We acknowledge Ofgem's view that further information could have been provided in our business plan, however it would have been possible to provide additional supporting information at Ofgem's request. This is the first time we have been able to respond on this issue and given the size of the reduction we would have expected some specific dialogue prior to July, as part of our cost visits or via a supplementary information request.

7.8 Although the majority of our 5000km High Pressures pipelines have legal easement (or license to protect the integrity of the asset from 3rd party activities) there are pipelines that do not have this protection, in most cases because they are laid in places where there is potential for future quarrying or mining.

7.9 In these circumstances our rights are more restricted with landowners often retaining a legal option to enforce the relocation, at our cost, if for example, the presence of the pipeline prevents mineral extraction. The expenditure relating to the management of the safety and security of supply risk is included under Non rechargeable diversions – Appendix 8.6 section 8 of November business plan**.**

7.10 The following section covers our concerns over Ofgem's calculation in turn and additional information to aid in their assessment of our forecast.

Calculation of GDPCR1 average

7.11 Within LTS Capex, the Initial Proposals disallow £3m p.a. (78%) of our plan submission for non rechargeable LTS diversions. This is based on historical average, but given the level of current request this level of allowance will not be sufficient to enable NGGD to discharge its obligations.

7.12 Ofgem have used a historic rate of £0.9m p.a. to set the allowance, we are not clear how this figure has been calculated, but we do not believe it is correct.

7.13 The following table shows our historic expenditure as per captured in our RRP submissions which show average spend of £1.6m pa against Ofgem's average of £0.9m pa**.** We have raised this with Ofgem via an error log (GD1-NGGPh4-20), we are awaiting a response.

Figure 7.1 – LTS diversion actuals

£m, 09/10 Prices	2008/09	2007/08	2010/11	2011/12	08/09-10/11 average	GDPCR average to date	Ofgem Allowance	Allowance variance to GDPCR average
EoE	0.5	0.6	0.5	0.6	0.50	0.55	0.30	-0.25
Lon	0.2	0.4	0.3	0.4	0.30	0.33	0.10	-0.23
NW	0.3	0.4	0.4	0.5	0.40	0.40	0.20	-0.20
WM	0.4	0.3	0.4	0.3	0.40	0.35	0.20	-0.15
NGGD	1.4	1.7	1.6	1.8	1.60	1.63	0.90	-0.73

New Requests for work

7.14 However, we do not support Ofgem's proposal to run with GDPCR1 historic rates given:

- the recent period of economic downturn, and
- the fact that we have seen a noticeable increase in the number of enquires received compared to those historic rates.

7.15 As mentioned previously, our increased expenditure forecast over RIIO-GD1 is predicated on the fact that we have seen a significant increase in the number of requests for (non rechargeable) 'major' diversionary works. Given the recent UK recession and the expected economic growth over the coming years this is to be expected.

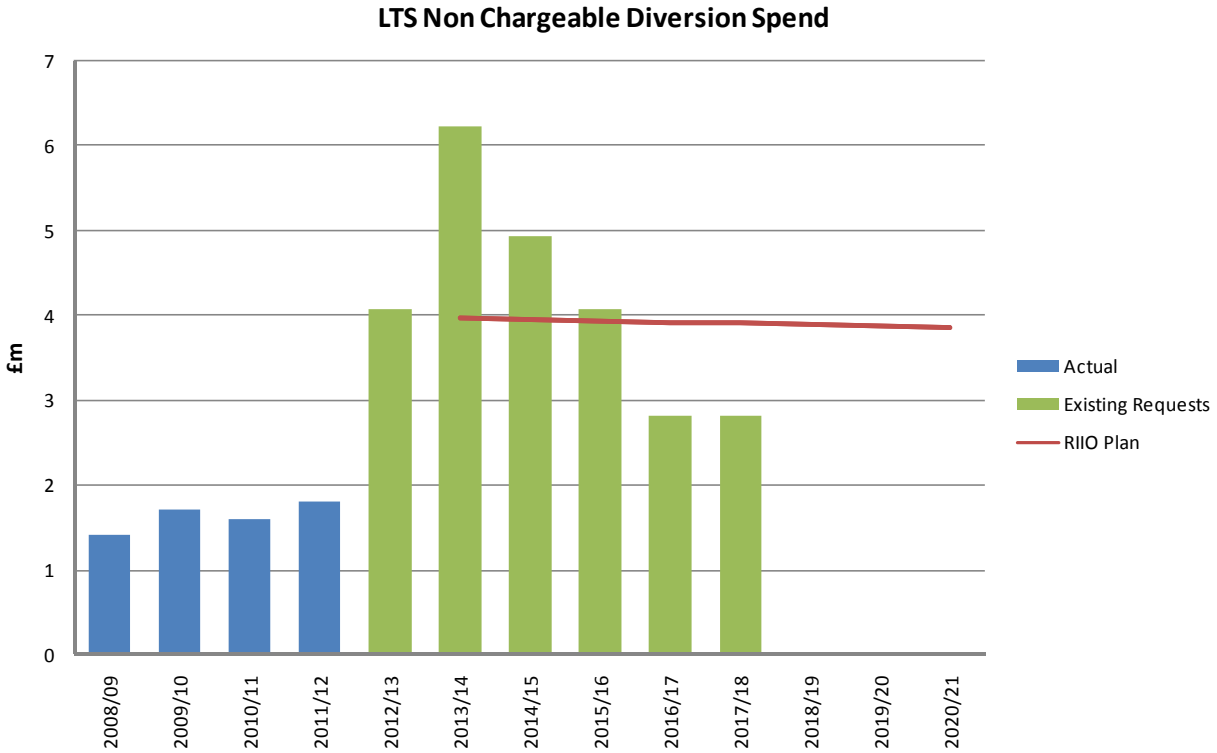
7.16 The increase has been primarily driven by commercial development and an increase in quarry and mining activities. The following table provides a summary of the projects we are currently dealing with. We have not included project costs due to the commercial sensitivity of the information; this is available on request by Ofgem.

Figure 7.2 – Summary of current LTS diversion requests

Network	Scheme/Project	Length (m)	Pipeline	Diameter
EoE				
NL				
NW				
WM				

7.17 The graph below shows the actual costs incurred from 2009 to 2012, the known customer driven expenditure out to 2017 (as detailed in the table above) and our investment forecast over RIIO. It should be noted that the reduction in current requests from 2013/14 is not a downward trend, it simply shows the level of visibility of major works we currently have out to 2017.

Figure 7.3 – LTS non chargeable diversions actual and forecast spend



7.18 Our forecast costs are based on historic spend, the investment required to deliver the major projects detailed in the above table and the ongoing existing costs. These costs are detailed below;

- Major Project Costs - £2.75m pa. for non rechargeable diversions based on past and current enquires.
- Ongoing payments/minor projects - £1.15m pa. where £0.6m is for additional protection works and £0.55m covers the cost of compensation for landowners where diversion is not cost effective.

7.19 The detail we have provided above represents our current information and projects that are known. We also continue to have enquires and ongoing dialogue with other 3rd parties requesting similar works and expect this to continue, and indeed increase as the economy recovers over RIIO-GD1. This being the case, and given our current level of enquires (averaging at circa £4m p.a.), we believe our RIIO-GD1 forecast represents a prudent view of expenditure on LTS Non Chargeable Diversions.

7.20 **Given the additional information supplied in this response we request that Ofgem revise their assessment and set the allowance for LTS non rechargeable diversions to that of our submission.**

Security

(Initial Proposals – Supporting document –Cost Efficiency, para 7.26 – 7.27)

Summary of our Position

7.21 Ofgem have assessed our security expenditure in 2 tranches:

- Critical National Infrastructure (CNI) expenditure which has been moved into the enhanced physical site security uncertainty mechanism, and
- Non CNI expenditure which has been assessed considering average network spend

7.22 We support the need for a uncertainty mechanism for CNI spend and have set out our position on this in more detail in our response to finance and uncertainty, question 23.

7.23 We have concerns with the assessment of our Non CNI security forecast expenditure even though Ofgem acknowledged the reasons for our investment yet still disallow over 50% of our proposed expenditure. Ofgem state *"Whilst we recognise the reasons NGGD give for the need for investment in security measures, this is a national issue and does not therefore require additional investment in NGGD's geographical areas"* (IP cost Efficiency, Pg51, para 7.27)

7.24 The rationale for this is it is a national issue and therefore Ofgem have normalised our spend to the average of the other GDNs. We believe this is not correct and there is no detailed information to explain why our site assessments and proposed approach have been rejected. Whilst we acknowledge that the issue is national, the required expenditure will absolutely be network specific, driven by the number, type and location of the sites.

7.25 The key issues on non-CNI security expenditure are:

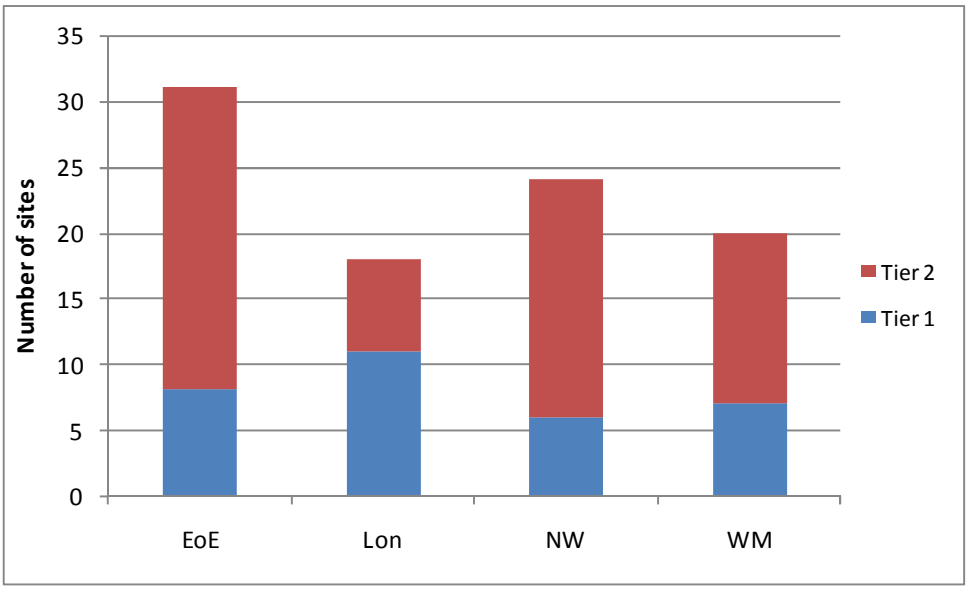
- The spend is network specific driven by the number, type and location of sites.
- Ofgem have acknowledged the reasons for our spend yet still disallowed it substantially increasing the risk of a loss of supply incident with no detail to explain the grounds on which our assessment is being rejected.
- Ofgem's calculation of the adjustment to our allowances is incorrect and does not sense check leaving NGGD with allowances 20% lower than an average size network.

Justification of Our Position

Spend is network specific

7.26 Security is an important issue for all GDNs however it is absolutely network specific. We have completed a detailed assessment of our sites that clearly identified the requirements for each of our networks. The table below shows the number of Tier one and tier two sites for each of our networks.

Figure 7.4 – Tier 1 and 2 sites by network



7.27 Clearly there is a difference for our networks which is driven by the design of the network and number of customers supplied via specific sites. The mix of these sites is also important in the assessment as Tier 1 sites have a higher specification due to their increased criticality.

7.28 Network differences are further evidenced through examination of the other GDNs plans. The table below shows the other networks security forecasts over RIIO-GD1 and the average of these networks. Clearly there are regional difference in this spend, which is driven by the factors described above, and these forecasts have been accepted by Ofgem.

Figure 7.5 – Non NGGD network security forecasts

Network	RIIO-GD1 Plan (£m)	% of average
NGN	5.69	119%
Sc		
So		
WWU		
Average	4.80	

The reasons for our increased spend is acknowledged

7.29 Our November submission contained a detailed appendix (8.8 Security and Resilience) which outlined our security requirements for the RIIO-GD1 period. This detailed how we have assessed our sites and the measures we plan to take on our tier 1 and tier 2 sites along with our local security requirements. That Ofgem acknowledge this assessment and the reasons for our spend yet disallow over 50% is not credible.

7.30 Security and resilience risks have changed materially since the design and construction of many of our operational sites and their physical defences. The consequences should we have a security related incident differ according to the criticality of sites and the risks posed to assets contained within them.

7.31 We proposed to address the risks associated with these events on a proactive basis and our business plan requested c. £60m (£7.5m pa.) for all security related workload, which can be broken down per annum into four distinct categories as shown in the following table.

Figure 7.6 – NGGD forecast security expenditure and proposed allowances

Area	NG Proposal	Ofgem Allowance	Delta
Critical National Infrastructure	£2.85m pa	Uncertainty mechanism	N/A
Tier One National Security	£2.76m pa	£2.40m p.a.	£2.23m (47%)
Tier Two National Security	£1.40m pa		
Local Security	£0.46m pa		

7.32 Ofgem's proposed allowances will increase the risk of loss of supply incidents occurring. The RIIO framework sets out the requirement to fully justify and explain the rationale behind our investments. Our security submission details all of the justifications behind our proposed investments and set outs our proactive response to the changing threat landscape.

7.33 Our November submission, details the increasing security threats and break-ins, clearly demonstrating a rising number of break-ins and security related incidents. Our November submission also provides examples where metal theft lead to EDF narrowly avoiding a serious loss of supply incident and particularly where Ofgem agreed a proactive approach should have been taken.

7.34 We believe the cost of our proposal is proportionate to the risk being addressed. If over the RIIO-GD1 period we had a single security incident which resulted in 100,000 customers being interrupted for ten days in winter then the cost of initial isolation, restoration of supplies, customer compensation and insurance claims could easily reach £40m. The changing and increasing threat landscape requires action to be taken now.

7.35 Our proactive approach to security has been reflected by forecasting a lower local security budget in comparison to our GDPCR1 profile. The disallowance will lead to an inefficient investment and not deliver value for money for our customers, as we would have to invest heavily in reactive repairs rather than addressing known issues up front, i.e. a higher proportion of our allowance would be spent on local repairs. In most instances continuous reactive repairs, would quickly result in a higher long term cost rather than a proactive investment to prevent or deter security threats.

7.36 Ultimately reduced spend would mean we would have to invest on fewer sites than identified, and potentially leave ourselves open to a risk of an incident impacting c.30,000+ customers, or enhancing security to a lower specification and not fully mitigating the risk that we have identified in an effective and cost efficient way.

Ofgem's calculation of adjustment

7.37 Ofgem have stated that they have reduced our proposed investment by equalling our expenditure with the remaining four networks, however, Ofgem have made an error in applying this adjustment in their models indicate calculated average annual network allowance of £0.56m for NGGD, and not the other networks average of £0.6m.

7.38 Notwithstanding the points above this approach of setting allowances based on the IDN average is incorrect as this spend is network specific. A sense check of the allowances, shown in the table below, clearly demonstrates that this simplistic approach does not work.

Figure 7.7 - Average annual security spend by GDN

£m Average Annual	Submission	Allowance	Dissalowance
EoE	1.37	0.56	-0.81
Lon	1.32	0.56	-0.76
NW	0.98	0.56	-0.43
WM	0.96	0.56	-0.40
NGGD average	1.16	0.56	-0.60
NGN			0.00
Sc			0.00
So			0.00
WWU			0.00
IDN average	0.60	0.60	0.00
Industry average	0.88	0.58	

7.39 For example you can see from that [redacted], an average size network, have had their forecast allowed in full at £[redacted] m, around £[redacted] m more than each of our networks, amounting to £4.8m for NGGD. This raises the question of fairness in particular given that Ofgem have recognised the reasons for our investment however still give us allowances 20% less than an average size network.

7.40 Ofgem's assessment of security should be network specific and mirror the rigor with which we prepared our plan. To apply an IDN average is incorrect and disregards the detailed analysis we put forward to support our business plan. We can see no logical reasoning within the IP to justify a cut in our plan forecasts in particular given the acknowledgement of our justification. Therefore Ofgem should allow our security expenditure in full to enable us to address the critical risks outlined in our plan.

Vehicles

(Initial Proposals – Supporting document –Cost Efficiency, para 7.25)

Summary of our Position

7.41 Ofgem's have disallowed £2.93m pa. across our networks, basing required expenditure on (lower) historic investment over the five years of GDPCR1. This is based on the assumption that all of our annual vehicle spend is cyclical over 5 years. We do not agree with this assessment as it is to simple and does not consider:

- the way in which we have optimised our vehicle spend on a totex basis, allowing us to prioritise other critical network investments for the benefit of the consumer.
- Replacement cycle of vehicles spanning greater than 5 years

7.42 We expand these points below and present more information showing that the longer run average spend is in line with our business plan forecast and that the approach taken gives the other networks, on average, 146% higher allowances than NGGD. Given this additional information we ask that Ofgem review their assessment of our vehicle spend and allow in full.

Justification of our Position

7.43 As detailed in the November submission (Chapter 10, Section 9), our whole-life costing approach, delivers an optimal replacement cycle of 5 and 7 years for light and commercial vehicles respectively. This replacement frequency has been validated externally through benchmarking against 70 of the top fleets operating in the UK. We believe this proposal is fully aligned to the RIIO handbook principles.

Figure 7.8 – NGGD forecast expenditure and Ofgem assessment

Area	NG Proposal	Ofgem Allowance	Delta
Vehicles	£10.29m p.a.	£7.36m p.a.	£2.93m p.a. (28.5%)

7.44 Ofgem's Initial Proposals will have a significant impact on the health and age of our vehicle fleet. This impact is will manifest itself in a number of specific ways:

- An increase in failure of vehicle's major components (gear box / engine etc)
- Negative impact on standards of service due vehicle breakdown
- Increased maintenance (opex) costs
- Deterioration in overall health of fleet leading to a requirement for a significantly increased capex spend post RIIO-GD1

7.45 The table below shows the respective allowances for the GDNs and shows that 3 of the 4 other networks have allowances higher than NGGD and in total the other networks average allowances are 146% higher than NGGD, despite our overall similar size. As discussed we believe there are 2 issues with Ofgem's assessment, the lack of consideration of totex optimisation of vehicles and use of a 5 year life cycle.

Figure 7.9 – Summary of GDN vehicle proposals

£m Total RIIO	Submission	Allowance	Dissalowance
EoE	4.01	2.58	-1.43
Lon	1.75	1.49	-0.26
NW	2.71	1.91	-0.80
WM	1.82	1.38	-0.44
NGGD average	2.57	1.84	-0.73
NGN			
Sc			
So			
WWU			
IDN average	3.55	2.69	-0.86
Industry average	3.06	2.27	

Optimising on a Totex basis

7.46 As discussed, Ofgem have disallowed £2.93m pa. across our networks, basing required expenditure on (lower) historic investment over the five years of GDPCR1.

7.47 This disallowance does not take into consideration the manner in which we have performed in GDPCR1 with respect to balancing our wider capital investments. We have incurred higher critical network investment in other areas which was partly balanced through a reduced investment in vehicles.

7.48 This lower capital spend over the GDPCR1 period was coupled with a corresponding increase in opex spend to maintain these assets. Ofgem's benchmarking of our proposed vehicles investments will result in insufficient capital to replace our vehicles and insufficient opex to maintain the fleet for a longer period (against industry standards).

7.49 We consider this to be cherry picking lowest cost of both historic capex and opex. This insufficient investment is due to our lower historical spend compared to iDN's, in summary we are being penalised for lower historical capital spend and maintaining our commitments in GDPCR1.

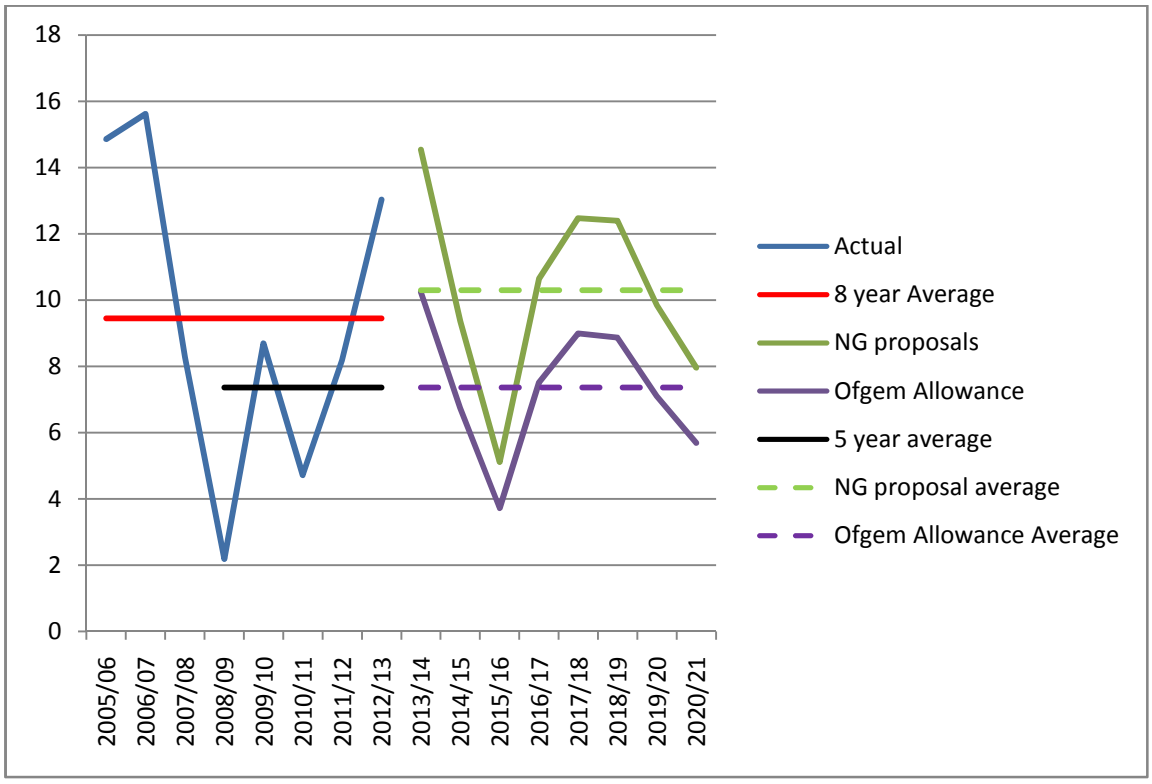
7.50 Additionally, this approach rewards continued high levels of investment as companies who have heavily invested over GDPCR1 are being allowed to continue with high investment profiles whilst reaping the benefits of lower opex costs.

Replacement Cycle

7.51 As detailed in our plan our whole-life costing approach, delivers an optimal replacement cycle of 5 and 7 years for light and commercial vehicles respectively. Using a 5 year average will therefore under estimate our investment needs. In addition to this, and as detailed in the RRP submissions, we will look to extend the life of our vehicles through further consideration of condition and mileage on individual vehicles before replacement is approved.

7.52 This means that to use a simple 5 year average will under/overstate our capital requirements depending on the phasing of spend (which can be very peaky). Figure 7.10 below shows the historic and future spend against vehicles. It clearly shows the large difference between 5 year and a longer run 8 year averages. You can see that the longer run average, which accounts for the longer replacement cycles and totex management over an equivalent period of time as to RIIO-GD1, is broadly in line with our RIIO-GD1 business plan forecast.

Figure 7.10 – NGGD actual vehicle spend and RIIO forecast



Summary

7.53 In order to ensure we are adequately funded Ofgem need to address the following in the final proposals:-

- Use of five year averaging period – this is not appropriate for an investment programme that spans eight years and comprises assets with a replacement cycle of greater than five years.
- Our spend profile during the GDPCR1 period was largely affected by wider management decisions which led to a reduction in the specific investment programme at the expense of increased maintenance (opex) costs.
- Our fleet cannot be effectively managed with low opex and low capex allowances. Any reduction to our investment proposals would require a corresponding increase in opex allowance to cater for the higher fleet maintenance costs that would ensue.
- It would appear that the IP effectively rewards DNs with a historically high capex spend with significantly higher RIIO-GD1 allowances.

7.54 **On this basis we do not consider that any changes are required to our submission and would ask Ofgem to allow in full.**

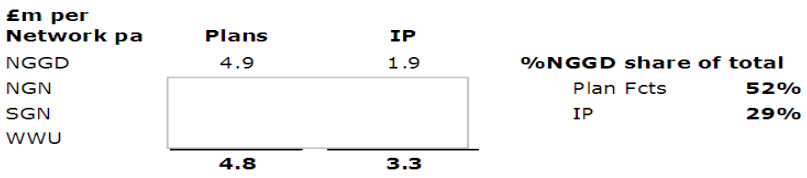
IS Systems & Infrastructure Capex

(para 7.22-7.24 and Appendix 3, para 1.71 – 1.77, Table A3.9)

Summary of our Position

7.55 NGGD fundamentally disagree with the Ofgem's Initial Proposals for IS Systems and Infrastructure capex on a number of counts. As can be seen in the table below, the proposals give [redacted] a greater allowance than NGGD, despite Ofgem working on an assertion that a company has fixed (i.e. equal) development costs but implementation costs which are proportional to the number of networks owned. [redacted] have half our number of networks but have been given a capex allowance 11% higher. This is inconsistent with Ofgem's stated methodology and discriminates against NGGD.

Figure 7.11- IT Costs over RIIO period per Network (average annual)



7.56 Our November Business Plan[51] included significant justification for our IS Systems and Infrastructure capex, since then we have had extremely limited dialogue with Ofgem in this area. In our plan submission we highlighted that varying business strategies can lead to varying levels of IT investment, but that these are offset by lower costs elsewhere. To not allow for this is a clear example of cherrypicking.

7.57 We have identified a number of arithmetic/formulae errors in Ofgem's model which has been used to derive the Initial Proposals. Notwithstanding this they have used a recommended disallowance from technical consultants which has not been well-justified.

7.58 The approach initial proposal methodology on IS Systems and Infrastructure is contrary to previous regulatory precedent set at Network Sale and re-affirmed in GDPCR1 where Ofgem stated that diseconomies of scale would not be funded, as the IP sets single company networks at a far higher cost per customer than for NGGD. This position was re-asserted in the roll-over year for GDPCR1, which stated *"As part of GDN sales, we made it clear that diseconomies of scale relating to capital expenditure would not be allowed."*

7.59 As such we would urge Ofgem to approach the setting of this allowance based on the same practice as other business support costs and use the 2nd best approach to setting the UQ allowance based on a scale factor of the MEAV, which is consistent with the capex benchmarking methodology.

7.60 **This approach identifies that a more appropriate allowance for IS Systems and Infrastructure is £19.4m pa. We have explained the derivation of this value below.**

[51] Appendix 10.1 IS Capital Expenditure

Justification of Our Position

7.61 We provided a well justified plan explaining the basis for our planned IS and Infrastructure investments in some detail. We have had no dialogue with Ofgem since our November submission and no questions on our IS capex proposals.

7.62 We are surprised at the scale of the disallowance (62%) given that NGGD's investment for its four networks is in-line with the other companies four networks (52% of plan forecasts). We expected to be around or above the expenditure levels of the other four networks given:

- Differing strategies – we have highlighted[52] our greater reliance on IT than the other companies. This drives higher IT costs, but lower costs in other areas, which can be seen in our plan were NGGD has approximately 1/3 less FTEs than the other networks and plans to reduce this further however to achieve these reductions we have invested heavily in IT and to maintain the benefits from our investment we need to continue to upgrade and maintain these systems. This is another instance where totex benchmarking would be more appropriate than looking at each individual component of costs.

- As a larger, more centralised organisation, the option of falling back to manual processes in the event of system failure becomes increasingly impossible. This has a twofold effect on our costs, firstly the systems we implement have to be resilient and reliable and secondly we will need contingency systems for our most critical processes.

- All GDNs have all recently upgraded their major operational systems (post network sale and more recently for us with our new suite of systems, described in our November Business plan[53]) and therefore we would expect equivalent levels of investment to maintain these new systems.

7.63 In applying their methodology and cutting our IT capex allowance to lower than the iDNs, whilst also using our lower direct opex performance to set the UQ is a clear example of cherrypicking, Ofgem have proposed capex allowances that cannot sustain the lower opex as NGGD drive UQ in a number of activities.

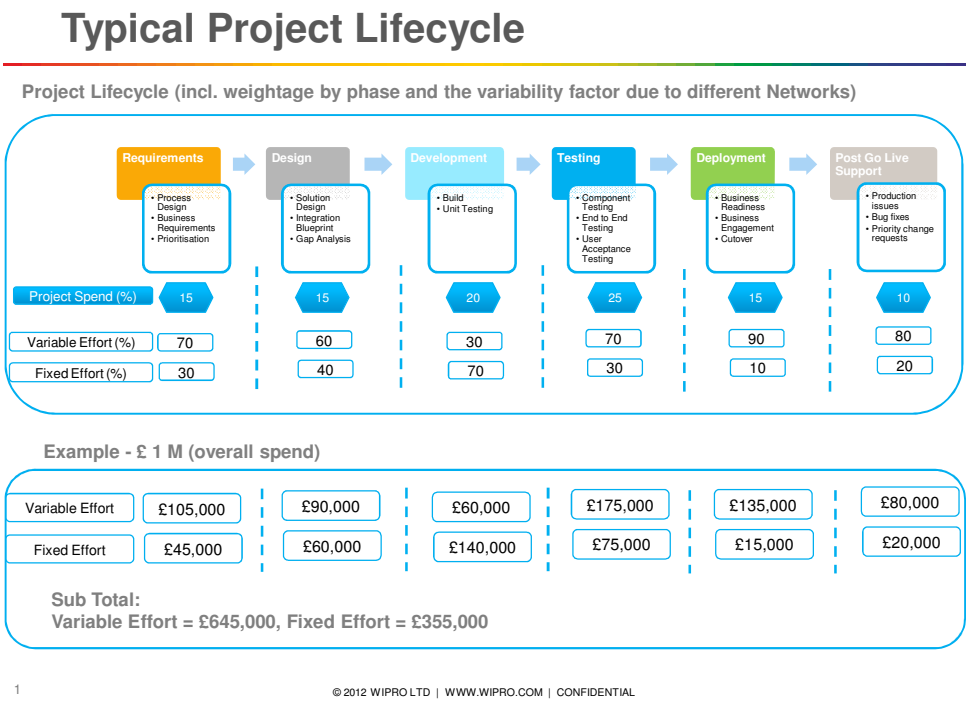
7.64 In their Initial Proposals, Ofgem state that their modelling is based on the principle that design costs would be the same for any size of organisation, while implementation costs scale with the number networks operated. However their model contains a number of errors which lead to a much larger reduction for NGGD than would apply if the principles of the model had been applied correctly. Their proposed allowance is actually based on advice from their technical advisors – RUNE Associates who have limited IT expertise. We have sought clarification and justification of this figure but have received no response. The combined effect of these factors is a proposed allowance for NGGD lower than for [redacted]

[52] April Update E7 – Business Support and Pass Through a2.20 to a2.29
[53] A10.1 IS Capex Expenditure –Section 8

7.65 We also have concerns over the assumptions made by Ofgem, there has been no consultation or evidence to support the assumption of the 30:70 split for an eight network company and the assumption that a singleton's development equals a 2 or 4 network company is too simplistic. We consider that looking at IT projects costs as being either 'fixed' or 'variable' is more applicable to the way that Ofgem have modelled IT capex than the original definition of 'design' and 'implementation', which were open to interpretation (as evidenced by the variation in the GDN submissions). This is because some aspects of design will vary by the organisation size and number of networks operated as there are inevitably some differences in operational practice across large organisations, which are often driven by external factors such as application of lane rental regulations.

7.66 We have asked Wipro, one of our Solution Delivery Partners with experience in Gas Distribution and other utility markets to consider the proportion of costs which are fixed and which are variable. Wipro have provided this information for each stage of an IT project based on their experience of working with a number of organisations including NGGD. Overall this gives 35% fixed costs and 65% variable costs for a four network company, equating to 21% / 79% for an eight network company.

Figure 7.12 – Fixed and Variable elements of NGGD IS projects



7.67 Applying these revised percentages to Ofgem's model give the following results:

Figure 7.13 – Implied NGGD allowance from applying revised fixed / variable cost split to iDNs

£m pa	%Dev (i)	Hence Split of IP Allowances Development	Implementation		Implied NGGD Allowance (ii)
NGN	61%			=>	
SGN	43%			=>	
WWU	61%			=>	

(i) % development translating from 35% for 4 network to 2 and 1 network operators
(ii) Applying Dev + x2 or x4 implementation costs for scaling to NGGD networks

7.68 Thus using Ofgem's logic and the fact that Ofgem technical assessment accepted in full the [redacted] plan submission, at a minimum Ofgem should allow NGGD £13.1m p.a..

7.69 However, over and above these points on the application of appropriate scale differentials across the network companies, this is a unique methodology (for which they have not looked at areas where NGGD spend more because of their size) and contradicts Ofgem's previous policy as set at network sale. At that time, Ofgem stated that diseconomies of scale would not be funded. This position was re-asserted in the roll-over year for GDPCR1 [54], which stated *"As part of GDN sales, we made clear that diseconomies of scale relating to capital expenditure would not be allowed."* However, Ofgem's Initial Proposals for RIIO-GD1 sets single company networks at a much higher cost per customer than NGGD.

7.70 As such, to keep consistency with Ofgem's proposed approach to benchmarking business support costs, NGGD believe the appropriate way is to benchmark IS System & Infrastructure by selecting the second best value given scale. Based on Ofgem's proposed capex benchmarking driver, we have calculated the impact of this using MEAV as the scale driver. This produces the following allowances:

Figure 7.14 – Consistent Benchmarking Approach

£m pa	Plan	MEAV	£/MEAV (i)	Ratio to 2nd Best	Scaled UQ Value (ii)
NGGD	19.6	29365	0.67	1.01	19.4
NGN					
SGN					
WWU					

(i) Plan £m / MEAV £m x 1000
(ii) Plan £m / Ratio to 2nd Best

7.71 **For consistency with regulatory precedent and of benchmarking application we would urge Ofgem to move their position and change the allowance for IT Infrastructure and Systems to £19.4m pa for NGGD.**

[54] Ofgem GDPCR One Year Final Proposals – Dec 06 (ref 205/06)

Land and Development

(Initial Proposals – Supporting document –Cost Efficiency, para 7.28-7.29)

7.73 NGGD understand Ofgem's rationale for disallowing the capex costs of a new training facility, given that their benchmarking was indicating a lower cost per trainee than had been included in NGGD's submitted plan.

7.74 However, as clearly evidenced in our response to the Training and Apprentice Opex allowance in Chapter 6 question 1 (Training & Apprentice Section), NGGD is in fact the most cost efficient overall when considering the total cost of training in relation to the average total cost per qualifier.

7.75 The evidence that supported a capital investment for our training facility as opposed to increasing ongoing opex was fully detailed in our April plan narrative and the associated cost benefit analysis. An allowance set purely on opex training costs is a clear case of cherrypicking.

7.76 We strongly believe that inclusion of the capex cost of the additional new training facilities in our overall 'training' allowance is entirely justified. It is an integral element of our submission, for which we have clear evidence of an efficient level of overall spend.

7.77 Therefore we ask Ofgem to reconsider our proposal for training facilities in the context of totex costs and to recognise the benefits of our chosen strategy.

Question 2: Do you agree with our approach for allowing costs in line with historical levels for investment where supporting evidence is lacking or not sufficiently supported by CBA?

Our Position

7.78 We are supportive of the approach that networks should justify expenditure with evidence and we acknowledge that Ofgem have been consistent in stating the need for GDNs to provide justification to support spend in the next price control. This is a principle that we acknowledged as a fundamental building block of RIIO-GD1

7.79 Evidence, however, should not be limited to cost benefit assessment and where appropriate other technical assessments and GDNs wider legal and commercial obligations must be considered. In line with this approach we would expect to see supporting information detailing the assessment of our submitted evidence.

7.80 Under these principles we believe that investments should be considered on a case by case basis and where applying historical averages consideration should be given to:

- Changes in the legislative and commercial environment
- Investment cycles and asset lives so as not to punish networks with lower spend than average in recent history
- Totex costs and the opex and capex trade offs that have been made historically and moving forward

7.81 In response to this approach we submitted extensive business plans and responded in detail to any supplementary requests. We are of the opinion that our submission included a comprehensive and broad spectrum of evidence, including input from stakeholders, CBA and condition information which we believe fully justified our proposed investments and was in line with Ofgem's desire for stakeholders to play an ever increasing role in RIIO.

7.82 There is very limited evidence in the Initial Proposals to show Ofgem's analysis in this area and how they have assessed whether supporting evidence is sufficient or not. We are surprised at the areas of our plan that Ofgem appear to have not accepted our evidence and instead have applied historic levels.

7.83 Notwithstanding the limited visibility of the assessment of our evidence, examples of the incorrect application of historic levels can be seen on vehicles, LTS diversions and condition mains workload. All these areas have been the subject of significant plan disallowances, despite the extensive detail contained in our submission.

- Vehicles spend for example has been set at GDPCR1 levels (£2.9m pa lower than plan) assuming a 5 year replacement cycle. This does not adequately consider the way in which we have optimised our vehicle spend on a totex basis or the replacement

cycle of vehicles spanning greater than 5 years. This is detailed more fully in our response to question 10, cost assessment.

- LTS Diversions has been adjusted to GDPCR1 average spend (£3m pa lower than plan). This does not consider the prevailing economic conditions throughout GDPCR1 and the changes we anticipate driven by the wider economic recovery over RIIO-GD1. We have provided further evidence to support this view which outlines the volume of new request we have received for work within the RIIO-GD1 period. This is detailed more fully in our response to question 10, cost assessment.
- Mains Condition spend (iron >30m from property, steel and non standard materials) on the other hand has been fully disallowed when we have historic levels of workload in the region of 160km pa. There is little rational to explain this drastic change in workload. This is detailed more fully in our response to question 14, cost assessment.

Chapter 8 - Replacement expenditure

Question 1: Do you agree with the assessment we have carried out and the results proposed for repex?

Summary of Our Position

8.1 We do not agree with the assessment carried out and the results proposed to repex. There are 2 areas of concern:

- Disallowance of vital safety and integrity driven work required to meet our statutory obligations of operating a safe and reliable network primarily through the deferral of cost beneficial investments due to a simplified 24 year payback threshold.
- Material errors in the cost assessment that leave us underfunded for the industry's largest safety driven investment programme.

8.2 In preparing our plan we have considered both the short and long term value to consumers, ensuring that we balanced the need to develop a low maintenance energy network that will play a vital role in the UK's future energy mix with the financial demand this would place on today's consumers. This focus on our customers, the outputs we deliver for them, ensuring an integrated solution that considers future energy needs complements the guiding principles of the RIIO framework.

8.3 Our investment plans were recognised by Ofgem in the initial assessment as 'a good example of an integrated approach to asset management' which 'responds to a greater degree than other GDNs' plans to the new HSE repex policy'.

8.4 Given this context we are disappointed in the simple way our plans have been adjusted. The changes in workload that have been enforced are very high level and do not mirror the detail in which our plan was prepared. Furthermore there are a number of errors in the application of cost assessment that lead to material disallowance in costs.

Justification of Our Position

Workload Issues

8.5 The following section summarises our concerns on repex workload adjustments:

- Incorrect calculation of tier 1 workloads leading to:
  - The inclusion of all material types when calculating HSE Iron mains length resulting in disallowance of all tier 1 condition volume, including small diameter steel. This will result in a derogation of safety and reliability standards between price controls that is unacceptable to us as a network operator.
  - No allowance of mandated taper down in Tier 1 workload resulting 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.
- material differences in network workloads for Non mandated iron <=30m from property despite the use of a common methodology resulting in customers receiving differences in safety, reliability and efficiency across the networks
- No separate consideration of, or allowances for, vital asset integrity condition workloads (steel, asbestos, other non standard materials and non policy) with a generic cost benefit assessment applied to all mains workload. Resulting in NGGD being unfunded for work essential under our PSR obligations to operate a safe and reliable network.
- No recognition of our statutory obligations on other services with the application of a benchmark to Other Service volumes (with no justification of how the benchmark was derived). This leads to no funding for essential works (and another example of cherry picking workloads).
- Reductions to our Relay After Escapes volumes through benchmarking deterioration rates effectively rewarding those networks that are not making the most efficient investment decision.
- Output adjustments are applied on a prorate basis not recognising the specific work allowed resulting in a mismatch between outputs, workload and cost.

Cost Assessment

8.6 The following section summarises our concerns on the repex cost assessment:

- Incorrect transfer of large diameter reinforcement into tier 1 assessment leading to understating of allowances and incorrect treatment of specialist workloads.
- Understatement of London productivity factor by 5%, clearly undervaluing the impact of working in London as evidenced by the relative benchmark position of London against other NGGD networks operated under the same model.
- Labour % in regional factor calculation inconsistent with assumptions used in determining RPEs further understating the London productivity adjustment.
- Incorrect treatment of other services in the total and repex regressions leading to understating of the CSV and consequently allowances.
- Allowance update for changes in workloads being a pro rata adjustment leading to mismatch between workload and costs
- Cherry picking of London MP schemes with no consideration of the integrated nature of the programme and therefore the knock on effects of removing projects with respect to lay methods (increased open cut and tunnelling). Results in a piecemeal approach that will present increased cost to the customer and under funding for NGGD.

8.7 In addition we note that if you add the two bottom-up assessments for Tier 1 and Tier2/3 & other repex together the resulting allowance is lower than that derived from the middle-up total repex regression (making appropriate regional factor for items such as London MP). This is an example of the cherry-picking effect that demonstrates that this phenomenon is inherent in the Initial Proposals.

Question 2: Do you agree with our approach for the assessment of tier 1 repex costs?

Summary of our Position

8.8 We have issues with both the workload and cost assessment of tier 1 repex, these are summarised below:

- Incorrect calculation of tier 1 workloads leading to:
  - The inclusion of all material types when calculating HSE Iron mains length resulting in disallowance of all tier 1 condition volume, including small diameter steel. This will result in a degradation of safety and reliability standards between price controls that is unacceptable to us as a network operator.
  - No allowance of mandated taper down in Tier 1 workload resulting 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.
- Cost assessment
  - Incorrect transfer of large diameter reinforcement into tier 1 assessment leading to understating of allowances and incorrect treatment of specialist workloads.
  - Understatement of London productivity factor by 5%, clearly undervalues impact of working in central London as evidenced by relative benchmark position of London against other NGGD networks operated under the same model.
  - Labour % in regional factor calculation inconsistent with assumptions used in determining RPEs further understating the London productivity adjustment.
  - Incorrect deduction of streetworks costs, which also flows through into Tiers 2 & 3.

8.9 These adjustments results in a material reduction in the outputs and value that our plan delivers to our customers.

Justification of Our Position

Workload

Calculation of Tier 1 HSE Iron workloads

8.10 In calculating the proposed work volumes for Tier 1 HSE Iron mains Ofgem have taken the following steps:

- Taken networks total Tier 1 (<=8") qualifying length (iron <=30m from property)
- Calculated a flat profile with no allowance for exit taper
- Added in an allowance for growth in non-qualifying mains

8.11 This then gives a proposed tier 1 workload over the RIIO-GD1 period. Finally this number has then been subtracted against our total tier 1 workload (excluding rechargeable diversions), this is shown in the table below extracted from IPs.

Figure 8.1 – Initial Proposal Tier 1 Workload Calculation

A	B	C	D	E	F	G
	Normalised Tier 1 requested workload T1 excluding rechargeable diversions	Total tier 1 qualifying mains population at start of RIIO-GD1 (sourced via SQ responses)	Workload over RIIO-GD1 to achieve completion by 2032 (flat workload profile) excluding rechargeable diversions and growth	Growth in qualifying mains population based on 3.9% of non-qualifying iron mains population (calculated annually)	Total allowed workload over RIIO-GD1 to achieve completion by 2032 (flat workload profile) including growth	Workload adjustment
	Normalised business plan submissions values	Supplementary question responses	C/19*8	Calculated from business plan data and SQ responses	D+E	F-B
	(km)	(km)	(km)	(km)	(km)	(km)
EoE	4,895.32	10,491.00	4,417.26	143.10	4,560.37	-334.95
Lon	2,765.42	5,994.00	2,523.79	35.98	2,559.77	-205.65
NW	3,709.32	7,365.00	3,101.05	58.88	3,159.93	-549.39
WM	2,672.68	5,637.00	2,373.47	111.76	2,485.23	-187.45
NGG		29,487.00	12,415.58	349.72	12,765.30	
NGN	4,178.97	8,490.00	3,574.74	96.76	3,671.50	-507.47
Sc	2,058.73	4,125.00	1,736.84	64.33	1,801.17	-257.56
So	5,002.68	11,744.00	4,944.84	191.62	5,136.46	133.79
SGN		15,869.00	6,681.68	255.95	6,937.63	
WWU	3,169.96	6,027.00	2,537.68	99.49	2,637.17	-532.78

8.12 This calculation is wrong for 2 reasons:

a) Firstly because the adjustment being made is against our total tier 1 workload (column B in table above). This workload includes small diameter steel and other Tier 1 condition work (iron>30m, non standard materials, steel).

b) Secondly the lack of acknowledgement of the need for an exit taper even though this is mandated by the HSE (specifically allowed for in the enforcement notice) and we provided a supporting cost benefit assessment.

8.13 This adjustment is therefore overstated for all GDNs and results in the disallowance of mandated workload (in the form of the Taper) and all tier 1 condition work, vital asset integrity driven workload.

a. Disallowance of Tier 1 condition

8.14 As described the methodology for calculating tier 1 workload is flawed as it results in total disallowance of all Tier 1 condition workload. This is a material error and shows no consideration of our requirements in this area (this is also an issue on tier 2 and 3 workload) despite our November 2011 business plan (appendix 8.4) and our April update (supporting document E3) describing this work type in detail supported by responses to follow up questions from Ofgem.

8.15 The tier 1 element of our condition workload consists of small diameter steel, other poor condition steel, non standard materials and poor condition iron >30m from property.

8.16 The largest element of this work at 60km pa is small diameter steel which we replace as encountered through our Tier 1 replacement programme. These steel pipes are in poor condition and will not pass pressure tests to allow us to reconnect them to the network, the national leakage survey data supports this finding that 27/30 small diameter steel pipes were leaking at standard operating pressures (typically 30-40mbar). In order to reconnect these pipes to the network they must pass a 350mbar air test, where a main is already leaking (as in 90% of the mains tested in the national leakage test) they would almost certainly fail being tested at almost 10 times the operating pressure at which they were already leaking. It is also fair to assume that a portion of mains that were not leaking would not pass when tested at 350mbar, meaning in excess of 90% of these mains could not be reconnected to the network.

8.17 This is essential asset integrity spend and we have forecast workload levels to continue at historic run rates for the RIIO-GD1 period, this is consistent with Ofgem's assessment of other asset integrity spend.

b) Tier 1 Taper

8.18 Ofgem's assessment of tier 1 workload conclude that the distribution networks did not require a profiled exit taper for tier 1 workload as it was not justified under CBA. This is wrong because:

- this is a mandated volume and the HSE enforcement notice, amended for the introduction of the 3 tier framework, specifically allows GDNs to profile work down
- we provided a CBA to support this decision which demonstrates this is the least cost option for our customers.

Mandated by HSE

8.19 We included an exit taper in our RIIO submission to efficiently manage the closure of this large scale programme. This is consistent with previous price control submissions and the enforcement order. When the 30:30 programme was first established a number of workload phasing were considered. The original enforcement policy stated the following:

All options for Transco to reduce the period within which the mains are replaced involve 3 stages: a steady increase in the replacement rate over a period of years to a maximum; maintenance of that maximum rate for a number of years; and then progressive reduction of this rate to zero over the final few years of the replacement programme. This profile is needed to deal with the logistics of recruiting and training staff to do the work and then reducing the workforce towards the end of the programme.

8.20 The revised 3 Tier framework from the HSE is also clear that GDNs should be allowed to appropriately profile work, including an exit taper stating 'As in the 2006 – 2013 enforcement policy, the GDN operators will be able to 'profile' their work to take account of the scaling down of workload towards the end of 2032.'

8.21 The exit taper is therefore clearly mandated by the HSE and should not be considered optional.

Benefits of Tapered work profile

8.22 In spite of these facts Ofgem stated in the IP that the exit taper has been removed as it was not justified under CBA.

8.23 In our November business plan we provided a detailed assessment of the options for profiling our tier 1 workload (Appendix 8.4). We are mindful of the impact on customer bills and considered the length of the taper and proposed a 2 year exit taper as opposed to a 5 year profile that was used to ramp up the mains replacement programme. We believe that we can manage the ramp down over a 2 year period and minimise the impact on current customer bills (2/5th of the impact). We provided additional detail on this in our April update (supporting document E3).

8.24 Over the consultation period leading to the publishing of IPs we also provided details of the cost benefit analysis we completed in assessing the inclusion of a taper. We included this cost benefit assessment, despite this being mandated by the HSE, to demonstrate the benefits to consumers of the inclusion of an exit taper, reducing the overall cost of the programme by £100m.

8.25 The most significant differential that drives this benefit is the ability to efficiently manage the ramp down of the work delivery contracts. Over the duration of the programme the value of the other benefits in terms of safety, environmental and operational savings are broadly similar across the options as each option results in decommissioning of all of tier 1 by 2032. That said, the inclusion of an exit taper will bring forward these benefits to consumers and result in significantly greater risk removal, leakage reductions and operational benefits within the RIIO-GD1 period of c.£41m.

8.26 Further consultation with Ofgem post Initial Proposal release highlighted their concerns more clearly. Firstly the sensitivities within our calculation of contract "wind up" premiums, secondly the additional flexibility offered by the 3 Tier framework, thirdly the increased costs due to constrained contractor resource which will be required to deliver the volume and finally the longer term uncertainty of the Tier 1 mains workload.

Contract Closure

8.27 In the analysis we provided to Ofgem prior to initial proposals we acknowledged the uncertainty on the scale of the premium and demonstrated through sensitivities that this would not alter the decision. That there would be an exit premium paid for a sudden stop in work is not a controversial statement. It is common practice in major infrastructure projects to both ramp up to a plateau workload and then ramp down toward the end of the programme.

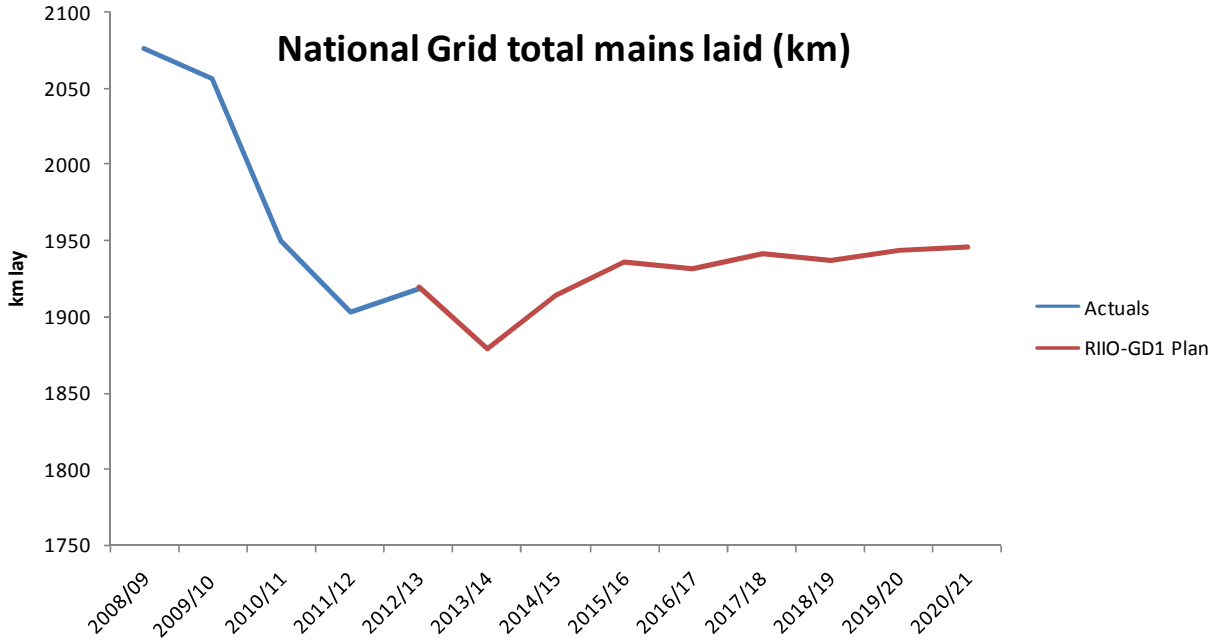
3 Tier framework flexibility

8.28 The second issue with regards to additional flexibility that the 3 tier framework gives us is not relevant in the discussion of a taper. The 3 tier framework has changed the way we will select our tier 1 workload giving more freedom to the GDNs to select pipes based on a range of outputs however, we are still mandated to replace all Tier 1 iron <=30 from property will have to be abandoned by 2032.

Contractor resource constraints

8.29 The third issue relates to the constrained contractor market as discussed during the GDPCR1 price control review. The situation is very different today for 2 principle reasons. In the first instance we have successfully ramped up our workloads to deliver the mains replacement programme and have been abandoning, on average, 1981km of mains over the GDPCR1 period (see table below). You can also see that our annual workload can flex by up to 100km year on year. The reason this is possible is our contract strategy gives long term visibility to our partners allowing them to flex resource as required.

Figure 8.2 – NGGD Total Mains Lay Actuals and Forecast



8.30 The volume attached to the taper is small in comparison to our annual volume (80km pa) and we can therefore absorb such changes within our now well established processes. The second key point is that our overall level of work is decreasing in RIIO-GD1 due to the

introduction of the 3 tier framework. We are moving from average annual workload of 1981km in GDPCR1 to 1929km in RIIO-GD1 (including a Tier 1 taper). This demonstrates how we will be able to utilise existing capacity to absorb this volume of work.

Certainty of Future Tier 1 workloads

8.31 Finally with regards to uncertainty over Tier 1 we believe that by completing more work over the RIIO period is a clear no regrets decision. Ofgem have pointed to uncertainty in 3 areas, namely the enforcement programme, risk modelling and the role of new technologies.

- Enforcement programme: As discussed the 3 tier framework has changed the way we will select our tier 1 workload giving more freedom to the GDNs to select pipes based on a range of outputs. Any changes over and above the 3 tier framework should be dealt with through the proposed mid period review process. This allows for material adjustments to our expenditure requirements (+/- 5% revenue) as a result of replacement policy changes and therefore any future changes should not be hedged into our RIIO-GD1 plan.

- Risk Modelling: The revised framework places more emphasis on additional output measures over and above risk removed. We remain committed to developing our risk modelling to assist our pipe selection and maximise benefits to the customers. This does not however impact on the overall level of work that needs to be completed within the 3 tier mains replacement programme and should not be a consideration in this decision. Any impact that risk modelling does have on the overall programme should be dealt with through the mid period review as described above.

- New Technologies: We are committed to investing in innovation to the benefit of our customers enabling us to drive efficiencies into our replacement programme. The inclusion or exclusion of an exit taper will not impact on this commitment; indeed increased workload over RIIO-GD1 puts more emphasis on us to ensure we focus on innovative ways to decommission these pipes.

8.32 It is clear that the inclusion of an exit taper in the programme, as per the HSE guidance, is a no regrets decision for our customers. In addition the enforcement order clearly states an exit taper should be allowed. Any concerns on uncertainty in the programme should be dealt with through the mid period review and not hedged into our RIIO-GD1 plan, logging up costs for future consumers. Finally we have ensured we minimise the impact on our customers scaling back the ramp down from 5 to 2 years and have quantified benefits of completing the tier 1 programme in a managed way demonstrating lower costs and additional outputs over the RIIO-GD1 period.

8.33 Inclusion of a taper ensures we can deliver our statutory requirements whilst minimising the cost and maximising the benefits to consumers.

Cost Assessment

Incorrect transfer of capital reinforcement into Tier 1

8.34 Ofgem have transferred the reinforcement associated with our London medium pressure into our replacement costs to allow like for like comparison. This is a sensible approach, however the work has been transferred into mains >125mm to 180mm and mains >180mm to 250mm. The table below shows the lay diameters for these specific projects.

Figure 8.3 – Reinforcement Lengths by Diameter

Rienforcemet Project Lay Lenghts (m)	Replacement Diameter	Material	Pressure	2015/16	2016/17	Total Length Laid
Leamouth to Bow Common	630mm	Steel	IP		3,313	3,313
Total Leamouth to Bow Common					3,313	3,313
Fulham to Battersea	180mm	Steel	IP	15		15
	250mm	Steel	IP	65		65
	630mm	Steel	IP	2,062		2,062
Total Fulham to Battersea				2,142		2,142
Grand Total				**2,142**	**3,313**	**5,455**

8.35 Almost all of this work (99%) is 630mm steel as such it should not be in the Tier 1 regression. The impact of Ofgem's treatment is that the majority of the associated costs are disallowed as the CSV is vastly understated in both the Tier 1 and totex regressions. However, even assigning this to the correct bands in the regression will result in an understatement of the CSV due to the specialist nature of this work (large diameter steel at intermediate pressure in central London, which includes a river crossing) which causes a high unit cost even for 630mm mains.

8.36 The nature of this work requires assessment to be completed outside of the regression. Given this we expect this work to be considered as part of Ofgem's technical assessments for our other tier 2 and 3 mains and include appropriate normalisations to the totex regression calculation.

London Productivity

8.37 Ofgem have adjusted for productivity within our repex regressions allowing a 15% uplift for the impact of London factors. This 15% is the lower end of the SGN assessment of the impact of urbanity on repex productivity in their southern network. As detailed in our response in Chapter 2 Question 1, we believe this understates the impact on productivity of operating in central London. We included comprehensive documents in our November[55] and April[56] submissions outlining our assessment of regional factors across all our networks (both positive and negative). From these, we believe that a regional adjustment of 20.3% should be applied to our London network.

8.38 Our calculations are outlined in more detail in Chapter 2, Question 1 of our response but a summary of our London productivity related Network Specific Factors follows. In respect of repex in 2010/11 these amounted to £11.1m, which represents 20.3% of London Networks' non MOBs costs. The main items are in respect of:

[55] Appendix A5.1 a, b and c
[56] G1 Benchmarking and Network Specific Factors

- Replacement pipe depth and hole sizes £9.4m: the calculated impact on labour and material costs of London pipes being on average 9% deeper than pipes of a similar diameter elsewhere.
- Tipping costs £0.3m: the additional cost of tipping in London, due mainly to higher tipping charges, and partly to additional tipping volume due to increased pipe depth.
- Relay After Escape costs ex Repair £1.4m: the additional job time, hole size, JCB hire (to break concrete roads) and Riser costs associated with London Relay After Escape.

8.39 That our 20.3% calculation is around the top of Scotia's range seems logical given that NGGD operates in more dense parts of London than Scotia. The table below, taken from Ofgem's sparsity data, shows that in Inner and Outer London, London Network operates in areas that are on average 20% more densely populated than those of Scotia.

Figure 8.4 – Southern Network Population Density Data

Ofgem population and area data - Inner and Outer London							
	2010 population		Area		Density	Density	London
	Southern	London	Southern	London	Southern	London	multiple
	Thousand	Thousand	km squared	km squared	per km	per km	times
Inner London	822	2,111	93	206	8,876	10,231	
Outer London	1,632	2,700	454	689	3,592	3,920	
All London	2,454	4,811	547	895	**4,486**	**5,374**	**1.20**

Labour % used in calculating regional factors

8.40 Ofgem have applied network specific labour mix when calculating regional factor adjustments for productivity. However, in calculating the Real Price Impacts for the RIIO-GD1 period a notional network structure has been used. We believe a notional number should also be used when applying the regional factor adjustment for London productivity because:

- The true proportion of costs which is made up of labour is subjective and difficult to assess consistently, especially where sub-contractors are used, or where services are bought from outside. We note that, in the April submission, the apparent proportion of labour costs for repex activities varies by Network between 69% and 84% - which is not plausible.
- This would be consistent with the RPE assumptions. When applying RPEs Ofgem has adopted a standard, notional pay element of costs across all Networks. It would be logical to use a similar approach for pay uplifts – although reinstatement would need to be treated as pay in this case.

8.41 However, if, despite the above, Ofgem intends to continue to use Network specific labour proportions numbers, please note that we have revised our London pay proportion of repex to 75% (see our letter dated 21st June 2012), and that if we treated all reinstatement as labour related, which in IP appears Ofgem's intention, that would rise to around 80%.

Incorrect Streetworks Deduction

8.42 The IP approach to Streetworks is to remove the figures contained within Business Plans for both existing and new streetworks schemes. New schemes are then covered by an uncertainty mechanism, whereas Ofgem then make an allowance for "efficient" Streetworks costs. While this approach is logical, for East of England and London Networks, the first step – the deduction of Plan numbers, appears to have been carried out incorrectly for the new streetworks in the Tier 1 regression, which then also flows through into the Tiers 2 and 3 assessments.

8.43 The numbers which have been deducted for Tier 1 new streetworks are contrasted below with those contained in our Business Plan.

Figure 8.4a – Allowed Non-policy Mains Workload

IP Input / Output - new SW		2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/2020	2020/21	Average
		£m	*£m*	*£m*	*£m*	*£m*	*£m*	*£m*	*£m*	*£m*
East	mains	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	services	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
East total IP		**3.6**	**3.7**	**3.7**	**3.7**	**3.7**	**3.7**	**3.7**	**3.7**	**3.7**
Lo	mains	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	services	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
London total IP		**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Plan										
East	mains	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.4
	services	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3
East total		**4.6**	**4.8**	**4.7**	**4.7**	**4.7**	**4.7**	**4.7**	**4.6**	**4.7**
Lo	mains	2.2	2.3	2.5	2.5	2.5	2.5	2.5	2.5	2.4
	services	0.9	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.0
London total		**3.1**	**3.3**	**3.5**	**3.5**	**3.6**	**3.5**	**3.6**	**3.6**	**3.5**
East - underdeduction in IP		**1.0**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
London - underdeduction in IP		**2.6**	**2.7**	**2.9**	**2.9**	**3.0**	**2.9**	**2.9**	**3.0**	**2.9**

8.44 The table shows that on average £3.9m too little has been deducted from the Tier 1 Repex regression in respect of new streetworks costs.

Question 3: Do you agree with our approach for the assessment of tier 2 and tier 3 repex costs?

Summary of our Position

8.45 There are several key areas that we believe need addressing on Ofgem's assessment of Tier 2 and 3 repex costs covering both the workload assessment and the subsequent cost assessments.

- Workloads
  - material differences in network workloads for non mandated iron <=30m from property despite the use of a common methodology resulting in customers receiving differences in safety, reliability and efficiency across the networks
  - No separate consideration of, or allowances for, vital asset integrity condition workloads (steel, asbestos, other non standard materials and non policy) with a generic cost benefit assessment applied to all mains workload. Resulting in NGGD being unfunded for work essential under our PSR obligations to operate a safe and reliable network.
  - No recognition of our statutory obligations on other services with the application of a benchmark to Other Service volumes (with no justification of how the benchmark was derived). Leading to no funding for essential works and another example of cherry picking workloads.
  - Reductions to our Relay After Escapes volumes through benchmarking deterioration rates effectively rewarding those networks that bid high. No adjustments to ensure the calculation of rates is uniform by network resulting in cherry picking of deterioration rates.
  - Output adjustments are applied on a pro rata basis not recognising the specific work allowed resulting in a mismatch between outputs, workload and cost.
- Cost Assessment
  - Allowance update for changes in workloads being a pro rata adjustment leading to mismatch between workload and costs
  - Cherry picking of London MP schemes with no consideration of the integrated nature of the programme and therefore the knock on effects of removing projects with respect to lay methods (increased open cut and tunnelling). Results in a piecemeal approach that will present increased cost to the customer and under funding for NGGD.
  - Internal inconsistencies in benchmarking on a number of items leading to partial allowance or disallowance of work, namely MOBs, London MP and other services

- Understatement of London productivity factor by 5%, clearly undervalues impact of working in central London as evidenced by relative benchmark position of London against other NGGD networks operated under the same model.
- Labour % in regional factor calculation inconsistent with assumptions used in determining RPEs further understating the London productivity adjustment.

Justification of Our Position

Workloads

Material differences in workloads through use of common CBA methodology

8.46 We have provided as detailed response to Ofgem's cost benefit methodology in question 7 of the costs and outputs section. In summary, we are supportive of the use of a common methodology and believe this is a fair way to assess the networks. This will ensure that customers across all of the distribution networks are receiving the same standard of network safety, reliability and efficiencies that this work enables.

8.47 However, using such a common methodology should give broadly similar workloads across all of the networks. This is because fundamentally the assessment is being completed on networks which have broadly the same characteristics with respect to their low pressure pipeline assets. Ofgem's assessment leads to a serious disparity across the GDNs as demonstrated in the table below.

Figure 8.5 – Allowed Non-policy Mains Workload

£m pa	Allowed Tier 2<threshold and Tier 3 Mains	% of industry allowed work
EoE	4.5	2%
Lon	53.8	18%
NW	27.9	10%
WM	0.0	0%
NGN	190.8	65%
SC	15.0	5%
SO	0.0	0%
WWU	0.0	0%
	292.0	

8.48 There is a clear disparity here with NGN receiving 191km of allowed work, 65% of the industry total. It is simply not plausible that the other networks would have so little work in comparison if a common methodology has been applied correctly.

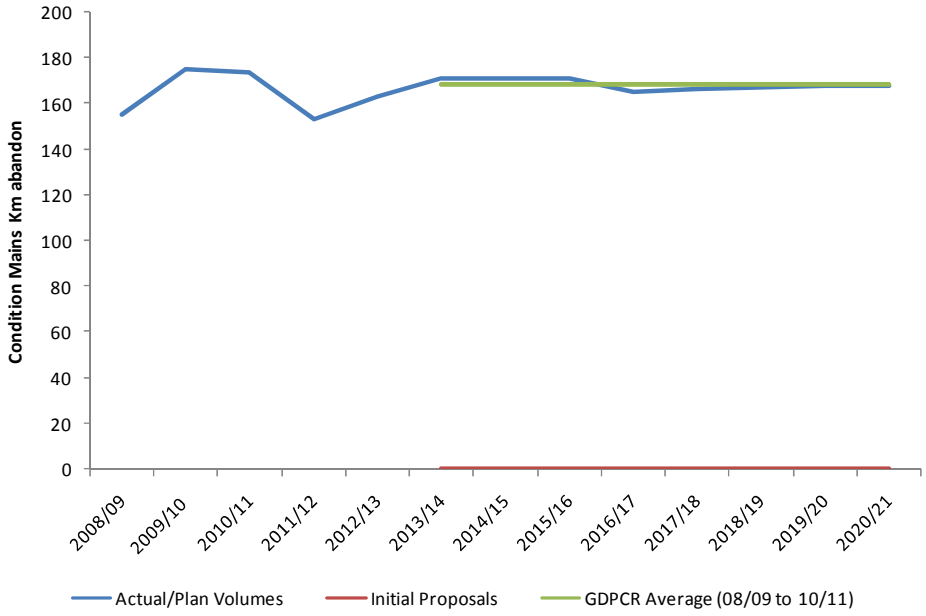
8.49 Out of NGGD's submitted volume of 922km of abandonment, 230km per network, only 86km of MP mains were justified under Ofgem's common framework that was outlined in the IP. The volume we submitted of 230km per network is in the same region as NGN (200km of abandoned main) and that such a small volume (2.7km pa) was deemed as justified is not credible in the context of NGN's allowance and the extensive work and evidence we provided.

Assessment of asset integrity Condition workload through cost benefit analysis

8.50 Outside of the mains replacement programme we have continued to address "condition" driven replacement including addressing the risk of non iron assets within 30m, small diameter steel and all mains including iron mains outside of 30m. We have had full disallowance of all of this work even though we have been delivering over 160km per year

historically. The chart below shows our actual and plan spend alongside a 3 year GDPCR1 average and the initial proposals. Clearly the IP allowances are not credible given this context.

Figure 8.6 – NGGS Condition Mains Workload Actuals and Plan



8.51 We acknowledge the need for CBA on discretionary activities however there is a minimum requirement for expenditure to pick up integrity driven failing assets. Our PSR obligations state that 'The operator shall ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair.' This work is essential in delivering on this obligation to operate a safe and reliable network and is not therefore discretionary.

8.52 There is limited impact of the changes on our HSE volumes in this area. We have forecast the volume of condition, asset integrity workload, will be maintained throughout the RIIO-GD1 period. This is consistent with Ofgem's treatment of other asset integrity workload which at the very least maintaining previous levels.

8.53 This workload contains c.60km p.a. of small diameter steel which we replace as encountered through our Tier 1 replacement programme as discussed in question 13.

8.54 We also included circa 10km of non standard materials which is predominantly asbestos mains. These are replaced as encountered throughout our operations. This ensures no future uncontrolled escapes on these mains limiting employee and public exposure to the dangerous material. This is a policy fully endorsed by the HSE and removal of this work is not acceptable from an asset integrity or employee safety basis.

8.55 The remaining volume is poor condition pipes that are no longer fit to flow gas. This volume of deteriorating Main will continue through RIIO-GD1. We have not seen any information outlining the reason for the exclusion of any of this work and do not see any reason for volumes of this work to decline over RIIO-GD1.

Assessment of other services

8.56 Ofgem's treatment of other services fails to recognise the need for the discrete categories of work in this area. This results in disallowance of work required by the HSE, work to enable smart metering roll outs and the cherry picking of a 'benchmark' ratio base on [redacted] forecast. Our submission contained detail on all of these categories, with cost benefit justification where appropriate, and does not appear to have been considered in this determination. The table below details the volumes we have submitted for these categories and the data table references for ease of reconciliation.

Figure 8.7 – NGGS Other Services by Category

No of Jobs over RIIO-GD1	EoE	Lon	NW	WM	NGGD
Targeted Replacement	12,720	6,008	12,984	4,784	36,496
Permali Meter Boxes	-	-	-	20,000	20,000
Other Customer initiated	20,800	12,800	16,800	9,600	60,000
Total Other Services	**33,520**	**18,808**	**29,784**	**34,384**	**116,496**

- **Targeted Service Replacement (Bulk Renewals)**
  - Ofgem state in the IP that 'where bulk service replacement falls outside of the HSE's revised iron mains risk management policy, it should be justified by appropriate CBA analysis'. The result of this is no allowances or recognition of the need to complete a targeted service replacement programme. This is incorrect and does not reflect the position that the HSE have taken on such work.

    Under the 30:30 program all services connected to iron mains would have been replaced in line with the HSE guidance. The revised policy means that substantial amounts of Tier 2 and 3 mains will not be replaced and therefore the services attached to these mains not addressed. Our PSR obligations mean we must have a programme in place to manage these assets therefore ensuring we continue to operate a safe and reliable network. Our plan set out a targeted replacement policy which involves targeted replacement of Tier 2 and 3 connected services based on service leakage history in these areas.

    SPC186 'Enforcement considerations for inspectors investigating gas incidents arising from the failure of steel service pipes' states that inspectors should consider taking enforcement action where a GDN fails to 'Carry out the replacement and/or the condition assessment of the failed steel service pipe where there exists evidence (obtained systematically by the GDN) of a heightened local risk of failure.' Given that we have this data available to us and our obligations under PSR this is not work that should be assessed through cost benefit analysis.

    However, our April plan update provided additional detail outlining the cost benefit justification for inclusion of a selective renewal programme and the need for this programme to satisfy our PSR obligations. We also ensured that we focus and minimise this work mindful of the impact on customers. Given these facts Ofgem should allow this workload in full.

- **Permali Meter Box Renewals**
  - Ofgem have not funded our proposed costs to address Permali meter box replacement ahead of the smart metering roll-out programme. Our approach would have ensured that customers in these properties would be able to enjoy the benefits of smart metering early in the roll-out programme. We will discuss with Suppliers as part of the industry engagement through the Smart Metering Implementation Programme and agree up front how to manage this issue and the appropriate time to replace these boxes to allow smart meters to be fitted. Any associated costs incurred by NGGD will form part of the costs to be assessed as part of any smart metering uncertainty mechanism reopener.
- **Customer Driven Service replacement**
  - Ofgem have assessed our customer led requests for service work by applying a 'benchmark' ratio of 0.031 against customer numbers. This benchmark ratio is based on [redacted] forecast on the basis that their forecast was exclusively customer initiated work. This is not a benchmark ratio and another example of cherry picking. Our plan workloads are network specific and based on actual data and this should be reflected in our allowances.

Relay after Escape Volumes and repair deterioration rates

8.57 Ofgem have adjusted our relay after escape to reflect the number of external condition reports. The volume of external condition reports has been adjusted down as Ofgem have benchmarked the GDN deterioration rates.

8.58 We have provided a detailed response to this issue in our response within Chapter 6 Question 1 (Repair Section). These deterioration assumptions are flawed because:

- Companies have not reported the data consistently in the past.
- Companies have used different start points to their analysis.
- The answer is unreasonable – given the age of our Networks our deterioration assumptions should not be materially less than those of the other companies.

6.284 We propose that our Plan deterioration assumptions be made more consistent with the other companies, by recalculating them from 2005/6, rather than 2003/4.

6.285 From this point, we propose that a common assumption be applied, using the average deterioration rate – we prefer an average to an Upper Quartile calculation be used, as this is an engineering rather than efficiency assessment.

Output Adjustments

8.59 Ofgem's approach to output adjustments as a result of disallowed workloads are very simplistic, specific content relating to this issue is included in our response to question x. Ofgem have applied a % reduction that corresponds with the overall workload reduction. This does not account for the specific workloads or projects that have been disallowed in Tiers 2 and 3. In order to correct for this Ofgem need to apply adjustments to outputs by tier, this will ensure the remaining outputs are consistent with the work proposed.

Cost Assessment

Pro Rata Adjustments to cost allowances

8.60 All networks Tier 2 and 3 mains and associated service workloads and costs have been adjusted to reflect the workload changes in the IP. Ofgem have conducted a project by project review of our volumes and determined what they believe to be justified. This gives an overall length of allowed work.

8.61 In adjusting our workload and costs for the disallowances has then been done on a pro rated basis. So, for example where 100km of work has been submitted and 50km of projects accepted a 50% reduction in workload and a 50% reduction in cost has been applied. This then flows through to the Totex and total repex regressions and the bottom up assessment for tier 2 and 3. Where workloads are generic this is a reasonable way of making these adjustments.

8.62 However the assessment of workload has allowed specific projects with specific workload and costs. This means the work allowed has not been appropriately reflected in our workloads (in terms of mix) or cost allowances. This issue is exacerbated as the schemes accepted are exclusively large diameter Medium Pressure which have their own unique challenges and costs, this is discussed in more detail in the following section. In order to correct for this mistake Ofgem need to ensure that where specific projects have been accepted the specific associated costs and workloads should also be allowed.

Large Diameter MP in London

8.63 Our plan included detailed Cost Benefit Analysis to justify funding to remove/manage the risk of large diameter MP assets within London, which in terms of volume and location are unique to National Grid, through a holistic programme which maximised the delivery through insertion.

8.64 This CBA approach was detailed and fully representative of the costs and risk involved in these assets.

8.65 As such we are pleased to note that Ofgem have accepted our approach to assessing these mains. However, under the IPs Ofgem have only included the allowances to individual schemes that were Net Present Value positive, this cherry picking of schemes ignores the holistic approach that we have put forward which aims to maximise insertion through raising pressures in our London medium pressure network.

8.66 There are 2 issues with this approach:

- firstly the subsequent allowances do not reflect the allowed work and,
- secondly there is no appreciation of the impact on lay methods as a result of cherry picking and abandoning our holistic approach.

Impact of pro rata adjustments on MP allowances

8.67 As discussed in the previous section Ofgem have scaled back the costs in line with the workload adjustments, i.e. same percentage reduction to cost, workload and outputs, this has been done without accommodating for diameter mix, hence the massive disparity in forecast and allowed cost.

8.68 The table below shows the London MP costs submitted in the business plan by scheme and the associated mains reinforcement. As can be seen from this table that the schemes allowed by Ofgem have a forecast cost of £96.4m some £59.3m above the allowances given for this work.

Figure 8.8 – London MP Project Costs

Replacement Routes (£m 09/10 Constant)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Allowed
Lea Bridge PRS to Victoria Park Road (twin 48's)	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	No
Fulham to Hyde Park Part 1	0.0	0.0	0.0	0.0	0.0	7.6	0.0	0.0	7.6	Yes
Fulham to Battersea	0.0	0.0	10.7	0.0	0.0	0.0	0.0	0.0	10.7	Yes
Fulham to Hyde Park Part 2	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	8.5	Yes
Battersea to Monck St	0.0	0.0	0.0	9.9	0.0	0.0	0.0	0.0	9.9	Yes
Belgrave Sqaure to Monck Street	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	5.5	Yes
Fulham to Kensal Part 1	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	8.3	Yes
Leamouth to Bow Common Holder Site	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.9	Yes
Fulham to Kensal Part 2	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	5.2	Yes
Bow Common to Aldgate	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	7.0	Yes
South from Hornsey (Part 1)	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	No
Bromley to Lea Bridge Leg	0.0	9.4	0.0	0.0	0.0	0.0	0.0	0.0	9.4	No
South from Hornsey (Part 2)	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.8	No
Lea Bridge Leg to Islington	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	6.1	No
Kensal to Gospel Oak	0.0	0.0	0.0	0.0	16.9	0.0	0.0	0.0	16.9	No
Islington to Gospel Oak	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0	11.0	No
Canning Station to Bromley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	5.7	No
Islington and St Pancras	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6	13.6	Yes
Abbey Road PRS to Kensal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	9.0	No
Total MP Strategy Replacement Forecast	**15.2**	**13.2**	**16.7**	**10.8**	**23.8**	**21.3**	**24.9**	**28.2**	**154.1**	

Rienforcement Routes	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total	Allowed
Fulham to Battersea		3.0	6.9						9.9	Yes
Leamouth to Bow			2.8	6.6					9.4	Yes
Total MP Strategy Rienforcement Forecast	**0.0**	**3.0**	**9.8**	**6.6**	**0.0**	**0.0**	**0.0**	**0.0**	**19.3**	

Allowed schemes cost forecast	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Allowed Replacement	0.0	0.0	10.7	10.8	7.0	21.3	13.9	13.6	77.1
Allowed Rienforcement	0.0	3.0	9.8	6.6	0.0	0.0	0.0	0.0	19.3
Increase in open cut									
Total Allowed Schemes Forecast Cost	**0.0**	**3.0**	**20.4**	**17.4**	**7.0**	**21.3**	**13.9**	**13.6**	**96.4**
							Ofgem allowance		**37.2**
							Variance		**(59.3)**

Cherry picking schemes

8.69 In addition to this there is no consideration of the impact on our strategy of "cherry picking" (selecting only NPV positive) schemes in this way. We have completed network analysis to allow us to demonstrate the impact of not allowing our fully integrated plan. The table below shows the change in insertion rates for the allowed projects.

Figure 8.9 – Insertion Rates on Allowed Schemes

Project no.	Project	Capex/ Repex	Risk Removed	RiIIO-GD1 April Plan	Intergrated RIIO Plan % Insertion	Allowed scehemes % Insertion
3	Fulham to Hyde Park Part 1	Repex	3,459	2.3	100%	0%
6	Fulham to Battersea	Capex	1,065	5.4	43%	9%
7	Fulham to Hyde Park Part 2	Repex	2,612	3.7	100%	100%
9	Battersea to Monck St	Repex	1,815	6.4	62%	62%
11	Belgrave Sqaure to Monck Street	Repex	1,155	3.8	80%	80%
12	Fulham to Kensal Part 1	Repex	6,219	6.0	57%	57%
14	Leamouth to Bow Common Holder Site	Capex	276	4.1	88%	0%
15	Fulham to Kensal Part 2	Repex	599	3.0	100%	100%
17	Bow Common to Aldgate	Repex	935	6.0	62%	12%
39	Islington & St Pancras	Repex	5,116	13.2	42%	0%
	Total			**53.8**	**64%**	**34%**

8.70 This shows that through only including these projects there is a substantial increase in the requirement for size for size replacement. This means open cutting or tunnelling the replacement mains. This happens because under a piecemeal approach we are not able to increase the pressures to without isolating areas of the network and therefore sacrificing the integrity of the network.

8.71 Further to the network analysis our London Alliance conducted an assessment to ascertain the feasibility of delivering the alternative part open cut, part insertion MP programme and to identify the risks associated with the schemes in the context of delivering the required outputs during the next regulatory period.

8.72 For the purposes of this study 2 schemes within the programme have been assessed. The schemes assessed are reflective of the remainder of the programme and as such can be used to formulate a view as to the feasibility of the overall Ofgem proposals.

8.73 Schemes Assessed:

- Scheme 1 - Fulham to Kensal Green
- Scheme 2 – Islington & St Pancras

8.74 The 2 sites reviewed have been subject to a physical site survey (walked) and the outputs from this exercise have been used to ascertain as to whether the schemes can be delivered when considering the following 1) Buildability, 2) Reputational Impact and 3) Time Availability and Stakeholder Agreement.

8.75 A risk assessment has been developed to establish the risk associated with the delivery of the programme during the regulatory period 2013 – 2021. The risks have been assessed using National Grid's risk definition and scoring mechanism.

8.76 The results of the study and subsequent risk assessment suggest that any scheme to replace 42" and / or 48" mains by open cut technique will have a remote chance of being delivered during the next regulatory period. The deciding factors being inadequate availability of space, detrimental reputational impact on an International/ National scale

due to disruption to Transport, London Commerce and Tourism, unlikely to be able to re route 3rd party plant e.g. fibre optic cables, water etc and the inability to gain stakeholder agreement to complete the works in the allotted timeframe (full detail of the study are available on request by Ofgem). The photo below is illustrative of the underground congestion that we face when working on these mains.

Figure 8.10 – London MP Above & Below Ground Conditions

8.77 This demonstrates the extreme difficulty of open cutting these mains. The underground congestion is however just one aspect, the second picture shows the roads we are working on. A key element of our stakeholder management is limiting the road space we require for engineering works. Insertion techniques allow us to minimise disruption and costs which allows us to maintain good working relationships with local authorities.

8.78 Based on our assessment we believe the only size for size solution would be the use of tunnels. This is a very expensive and complex option and would escalate costs for the allowed schemes over and above the cost of our suggested strategy. We estimate that tunnelling gas pipes is £12,500 per meter, this equates to 12.5m per km. The revised approach means 16km cannot be inserted that would be under a holistic approach, assuming this was tunnelled this would add £200m to the overall cost of the project and would result in a total spend of circa £300m for the proposed routes. Clearly this is a high level estimate and would require significant work and time to get to a position where tunnelling costs, operational, legal and engineering issues were understood. However, this is clearly not a cost effective or realistic solution.

8.79 Schemes involving replacement by insertion technique stand a better than average chance of being delivered during the regulatory period due to less working width being required, they can be delivered by standard traffic management as opposed to road closure thus resulting in less disruption which will be manageable through a robust stakeholder engagement plan. However, even insertion carries risk for example 800mm pipe and fittings are not currently available for use and we have assumed in our business plan that we can innovate to deliver this diameter.

8.80 Overall the proposed workload from Ofgem does not represent the best solution for our customers. The costs to complete this work, and the disruption it will cause, present a worse option than our business plan proposals.

Internal inconsistencies

8.81 In addition we have concerns on the overall regression approach and internal inconsistencies in the treatment of repex items. We discuss this in greater detail in questions 4 and 8 however attach a summary below.

8.82 One of the consequences of the IP's modelling complexity is internal inconsistency, where costs have been wholly or largely allowed under certain approaches, but disallowed under others. This leaves it very unclear precisely what costs have been allowed in association with what work and outputs.

8.83 Two examples for NGGD concern MOBs work and the Medium Pressure mains replacement work, the latter having relatively high unit costs by diameter band due to its location in central London. Both of these have been reviewed and then wholly allowed in the bottom-up analysis for Non-Tier 1 repex, however, because there is no separate allowance made in the totex regressions, both have been largely or wholly benchmarked out.

8.84 Our proposal is that these costs should be subject to a normalisation adjustment, so that a separate allowance is made, post totex regression, for the additional workload and costs associated with both these types of work – which is the approach Ofgem has adopted for some other atypical costs identified by bottom-up analysis, such as for MOBs surveys

8.85 In the calculation for our totex regression and total repex MOBs are not adjusted for. MOBs do not have an impact on the CSV calculation however the costs are included which has the effect of disallowing them in full (although they are allowed in the bottom up analysis). To correct for this MOBs costs should be excluded from the regression analysis and then added back in after.

8.86 Finally the treatment of other services (including West Midlands' Permali meter boxes) is inconsistent. Ofgem have disallowed workload in the IP flowing this through to the bottom up assessment cost and workload and adjusting the CSV for the total repex regression. However, costs have not been adjusted out in the total repex regression leading to an overstating of the efficiency disallowance and impacting on the IQI position.

London Productivity

8.87 This is the same issue as raised in the previous response on Tier 1; please refer to this answer (question 2) for the detail.

Labour % used in calculating regional factors

8.88 This is the same issue as raised in the previous response on Tier 1; please refer to this answer (question 2) for the detail.

Chapter 9 - Combining the elements of our cost assessment and applying the IQI

Question 1: Do you agree with how we have applied IQI, and if not what would you propose to change? Do you agree with our approach to combining elements of the cost analysis?

Summary of Our Position

9.1 We support some but not all of the proposed changes to the workings of the IQI matrix.

9.2 We do not agree with the way in which Ofgem has combined elements of the cost assessment in order to determine networks' relative position on the matrix for a number of reasons that we have extensively covered in our response to the cost efficiency assessment in this consultation.

9.3 A revised approach to the cost assessment which addresses the material weaknesses we have identified combined with our proposed enhancements to the IQI matrix framework should be developed for Final Proposals.

Justification of Our Position

Application of IQI Matrix

9.4 Ofgem have stated in Initial Proposals that they believe there is no absolute impact on NGGD from their policy change to base IQI on second plan submissions versus the stated policy intent of basing on first plans. Now we have seen Ofgem's benchmarking policy, this has confirmed our concern that there has been a detrimental absolute impact. Ofgem benchmark would have been higher had they based it on first plans and hence absolutely and relatively NGGD would have had a better cost assessment if based on this first plan submission.

9.5 We submitted the lowest cost plans in our November submission (excluding our London network). We have estimated that the industry plans reduced by an around £500m (£60m p.a.) between November and April in response to the strategies and cost forecasts that we had set out in our November Plan. Given Ofgem's use of 50% of bottom up and 50% top down benchmarking, half of this cost could have been added to the benchmark (£30m p.a.). This level of cost equates to about 4% of totex on the IQI matrix and hence NGGD's assessment could have been 4 percentage points better had the assessment been done on the first plan. Taking our IP assessment of an average 115 on the matrix, this could have been 110 had this been done on the first plan submission. This would have given us additional base allowances of £20m p.a., an additional £6m p.a. in IQI upfront revenues and an improved IQI incentive rate. Therefore this shows there is an absolute impact from the policy change.

9.6 In order to ensure fairness with their original stated policy intent, we would ask Ofgem to consider this issue again and to consider the risks of setting an unfortunate precedent for future price controls in discouraging companies from submitting the lowest plans at the earliest opportunity.

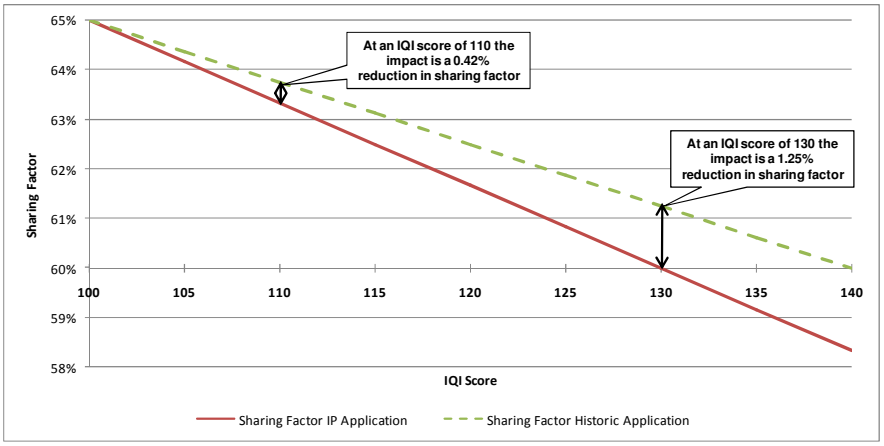
9.7 We welcome the changes made to the calibration of the upfront allowances in the IQI matrix such that they are more consistent with other regulatory precedents of RIIO-T1 proposals and DPCR5.

9.8 We support Ofgem's proposed increase to the IQI incentive rate to 60%-65% but we would like to understand the rationale for stopping at 65% rather than extending the range up to 70%. Part of our rationale for suggesting the IQI incentive range be increased was due to the lack of upside incentives in the return range and the benefit of enabling well performing companies with the opportunity to earn double digit returns. With Ofgem's proposed reduction from our proposed cost of equity (a 0.5% return reduction from 7.2% to 6.7%) and Ofgem's unwillingness to pursue any further output related incentives that we and other GDNs have proposed, the upside of the return range has worsened. This would imply that moving the range to 70% would have seemed a consistent way of maintaining the policy intent. This clearly needs to be considered alongside the concerns we have raised with the costs assessment methodology but we think the IQI incentive range should be reviewed again in parallel.

9.9 Furthermore, we also proposed in our April plan that a lower IQI incentive rate range should be applied to our London network given the increased risks to delivery that this network faces above the other networks. We see no evidence in the Initial proposals that Ofgem have considered our proposal in this area. We would welcome an understanding of whether this has been considered and if so, Ofgem's rationale for not applying it.

9.10 In conjunction with the rate, we would also like to understand Ofgem's rationale for changing the matrix scale. In previous price controls the range has been calibrated form 100 to 140 with the lower incentive rate at 140 and the maximum at 100. For RIIO-GD1 Ofgem propose to calibrate form 100 to 130. Albeit relatively marginal, this effectively reduces the incentive rate for networks assessed as over the 100 point on the matrix and again would seem counter intuitive to the policy intent of increasing the incentive rate. The graph below shows the impact of this change. A +/-1% change in IQI incentive rate would expand/contract the RoRE range by broadly £10m p.a. for our networks.

Figure 9.1 – Impact of Changing the Application of Sharing Factor



9.11 We support the post tax approach to the IQI incentive rate

Cost Assessment

9.12 We support the exclusion of output related workload disallowances from the IQI assessment; this is commensurate with being assessed on what is being delivered to the customers. However, we do not agree with the way in which Ofgem have combined their costs assessments to determine the relative position of the networks on the matrix for a number of reasons which we have elaborated on in other questions in this consultation response.

9.13 We do not think it credible that all networks should be deemed to be so inefficient as shown by the best assessment being a network scored at 107% of the Ofgem benchmark and the average network assessment being 113%. This is not a perception that our stakeholders have expressed on our plans.

9.14 Throughout our engagement we have tested with customers and stakeholders what they are prepared to pay to have the level of output they require delivered. Through our customer focus groups, customers confirmed a willingness to pay of between 3 and 10% more than current prices (based on a distribution element of £122 per annum) – the two key output areas being safety and reliability, with environmental and social outputs following.

9.15 Through our stakeholder workshops, various options have been costed and views sought throughout the stages of engagement. Views were sought on the overall package put forward in our Business Plan, with stakeholders (who are ultimately customers) providing support for the proposals. Stakeholders confirmed that the impact on customer's bills was "as would be expected". We have not seen any Ofgem analysis of customers' willingness to pay underpinning their initial proposals. This would have been an important piece of information to how short term and long term customer interests have been balanced. We requested to see any feedback Ofgem had received from their consumer challenge group whom all the networks met with during the plan development process. To date we have not had any information released.

9.16 Therefore a cost assessment which sees NGGD network's being classed as 15% inefficient on average does not appear justified through stakeholder evidence.

9.17 We have outlined a number of material weaknesses in the Initial Proposal cost assessment methodology and these are set out in our summary to the Cost Efficiency questions section. We would therefore expect the IQI assessment to be revised for our networks in Final Proposals.

Appendix - Key London Network Factors Summary

Summary of Our Position

A.1 In the Initial Proposals, Ofgem invited NGGD to further justify its evidence for Network specific factors for London Network.

A.2 Accordingly we have summarised for London alone the evidence for the strongest and most material Network Specific Factors which we submitted in our November and April Business Plans, plus additional evidence on our London productivity as compared to that of Scotia, all of which are shown below.

Figure A.1: Summary of London Network Specific Factors

	Activity	Reference	2010/11	RIIO ave	%
			£m	£m	
Opex	Emergency	A.17-A.27	1.0		9.6%
Opex	Repair	A.28-A.71	2.4		14.7%
Opex	Indirect	A.72-A.78	0.2		0.0%
Repex	Base productivity	A.81-A.120	11.1		20.3%
	MP replacement repex	A.121-A.129		13.0	
	MP replacement upsized	A.130-A.133		2.2	
	MOBs treatment	A.134		7.7	

A.3 The main opex items are in respect of London's:

- Emergency environment £1m – where the ultra urban environment, in particular the 50% population of flats and concrete environment, makes escapes more difficult and time consuming to trace than elsewhere.
- Repair environment £2.4m – where pipe depth, larger diameter band of repairs, and more concrete beneath road surfaces makes a far more difficult environment.

A.4 For repex the IP already acknowledges the difficulty of working in London, applying an uplift of 15%, taken from the bottom of a 15% - 20% range from SGN. For 2010/11, London's environment, largely associated with additional pipe depth, added around 20.3% to its costs.

A.5 The 20.3% uplift is consistent with the top of SGN's range, and is logical because our areas of Inner and Outer London are 20% more densely populated than those of SGN.

A.6 We have additional costs, not present in 2010/11 associated with Medium Pressure replacement, which due to its location in Inner London, has very high relative unit costs, which add a further £15m p.a, which is benchmarked out in the Totex regression.

A.7 Similarly MOBs costs of £7.7m p.a. are considered efficient in the bottom-up regression, but, with no driver, and a far higher level of cost than most Networks, largely benchmarked out in the Totex regression.

A.8 We agree that Repex productivity assumptions should be applied to Connections and Mains reinforcement, although in IP it has not actually been applied to the latter.

Section 1: Introduction

A.9 We believe that Network Specific Factors are an important part of understanding some of the apparent differences in "efficiency" between Networks.

A.10 Having carried out a significant amount of work in this area in the run-up to the RIIO-GD1 price control review, we submitted around 130 pages of analysis, explanations and calculations of Network Specific Factors for Opex, Repex and Capex in each of our Networks in Appendices A5.1a – c of the November 2011 submission. These were updated in the April 2012 submission, Chapter G1 - Benchmarking and Network Specific Factors.

A.11 However, Ofgem has not, at present, accepted these. Initial Proposals, paragraph 1.12 of the Cost Assessment Annex stated *"…we accept arguments that in practice there are lower levels of productivity in London associated with more congested infrastructure, depth of infrastructure and reduced access. We have considered both the information from NGGD that contractors cost 25% more in London and evidence from SGN comparing productivity across depots which suggests that there is a 15% to 20% loss of productivity from working in London. We consider SGN's evidence to be better justified than NGGD's but invite NGGD to further justify theirs as well."*

A.12 In response to that invitation, the purpose of this document is to make clearer those London productivity related factors which were included within our earlier submissions.

A.13 To this end we have extracted only those elements of Network Specific Factors which are especially material and which clearly apply to London Network.

A.14 The remainder of this document in split into the following sections:

- Section 2- Opex;
- Section 3- Repex; and
- Section 4- Capex.

Section 2: Opex

A.15 A summary of NGGD's main, most clear cut, network specific factors for London Network's opex is shown in the table below.

Figure A.2: Summary of London Opex Network Specific Factors

Activity	Factor	Reference	2010/11 £m	activity cost £m	%
Emergency	environment	A.17	1.04	10.8	9.6%
Repair	diameter	A.28	0.64		
	hole sizes - reinstatement	A.39	0.75		
	job times	A.58	0.67		
	jcb hire	A.68	0.32		
			2.38	16.2	14.7%
Other Direct	property	A.72	0.22	4.8	4.6%

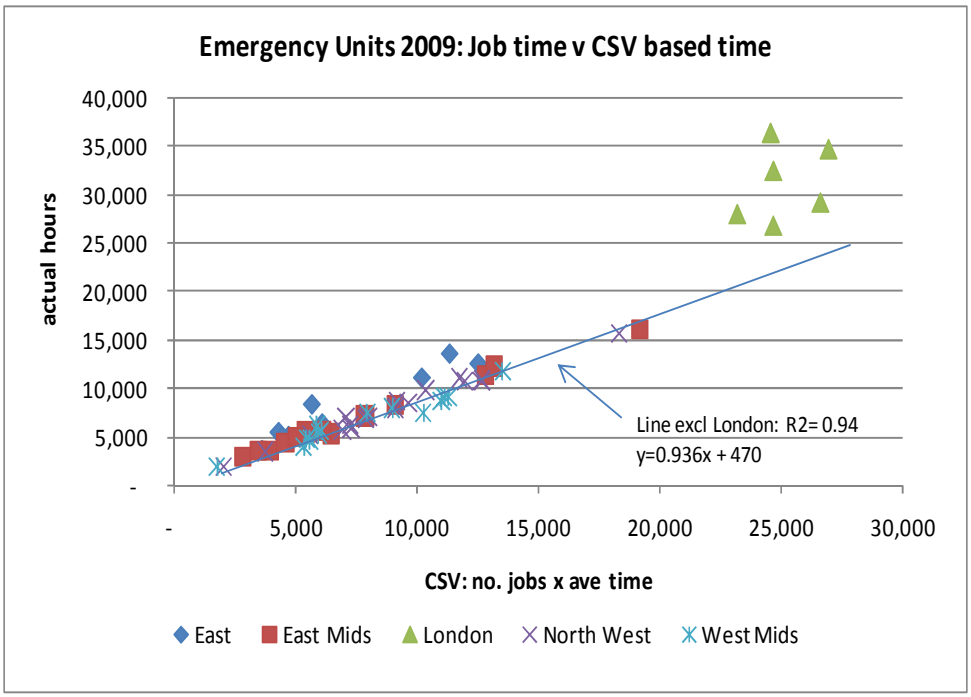
A.16 We note that the total of these factors is similar to the level proposed in our April 2012 submission, as adjusted for general pay and sparsity. Each factor in the table is considered separately in the remainder of this section.

Emergency – London Working Environment

A.17 As accepted by Ofgem, the London working environment affects productivity. We quantify that effect below for the Emergency activity.

A.18 Using our data on the work time and job number for the 61 units of our Emergency process for the whole of 2009, it is clear that London Network takes significantly longer on its emergency work, excluding travel, meterwork and D2 rechecks (the last now placed in Repair activity by Ofgem), than other Networks, as shown in the chart and table below.

Figure A.3: Emergency units job times regression



	Hours per line	Actual hours	Delta
East Anglia	59,351	70,967	-11,616
East Midlands	97,429	96,070	1,359
North West	146,007	142,568	3,439
West Midlands	100,316	93,499	6,818
Total	**403,104**	**403,104**	**0**
London implied	140,388	187,714	*-47,326*

A.19 London's additional time (delta) represents 34% of the predicted work time. We have investigated why London jobs times should be higher than the average elsewhere – customers should only fund London's additional costs to the extent that they are efficiently incurred.

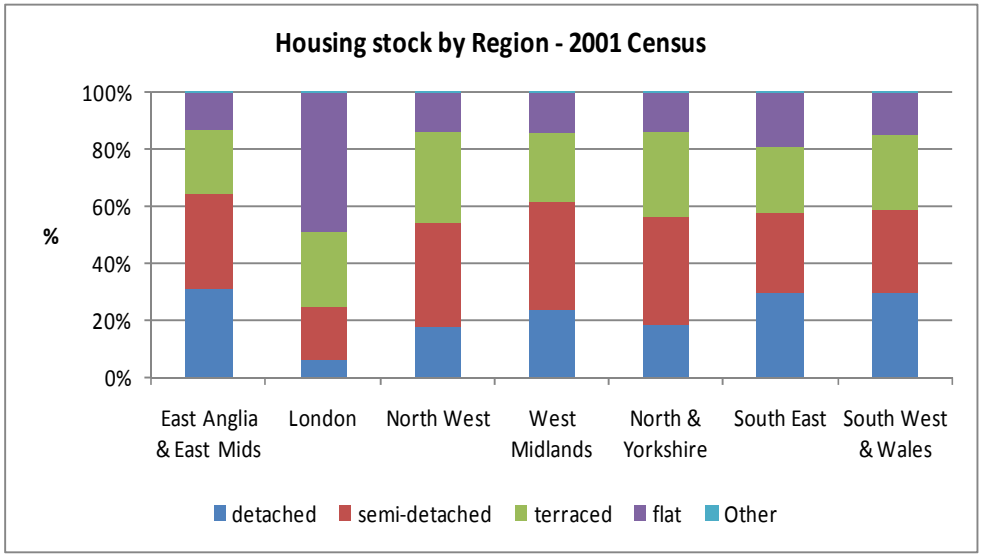
A.20 Our FCOs follow a set of procedures known as the Osgem rules to determine the steps to follow when searching for gas – an exercise which is carried out not only when first responding to a PRE, but also when determining when the Repair has been successfully completed.

A.21 The most straightforward PRE to deal with involve a stand-alone property, such as a detached house, surrounded by grass, so that there is room to park and work, and the escape is likely to be detected near to where gas was smelled. The most difficult PREs are associated with flats in built up areas, where there may not be room to park and work,

the gas may have travelled some distance underground and multiple properties may need to be accessed.

A.22 Data on the make-up of the housing stock in different areas in England & Wales has been obtained from table KS19 from the 2001 Census, as shown below.

Figure A.4: 2001 Census Housing stock by region



A.23 It can be seen that London has almost 50% of properties being flats, as compared to a maximum of 19% elsewhere, which would be expected to explain why London is such a difficult working environment.

A.24 However, from our Management Information we have found one aspect of additional time which we would not ask customers to fund, that associated with London's Repair Teams taking longer than average to attend "immediate attend" escapes, so the FCO has to wait longer than average, which is worth around 3,550 hours per annum.

A.25 The table below calculates the efficient adjustment that should be made to London's Opex costs due to its difficult working environment.

Figure A.5: London Emergency efficient additional job time

London Working Environment	
London additional hours	47,326
Less: above average Repair waiting time	-3,550
Efficient additional hours (A)	43,776
Total annual FTE time (FTE x 52 x 40)	654,507
Less D2 time	-58,311
Less metering time	-109,190
Less time charged to Repex	-36,652
Opex time (B)	450,354
Efficient additional hours % total time = A/B	**9.7%**

A.26 We propose that London Network's time (including travel) is high by around 9.7% due to the London working environment.

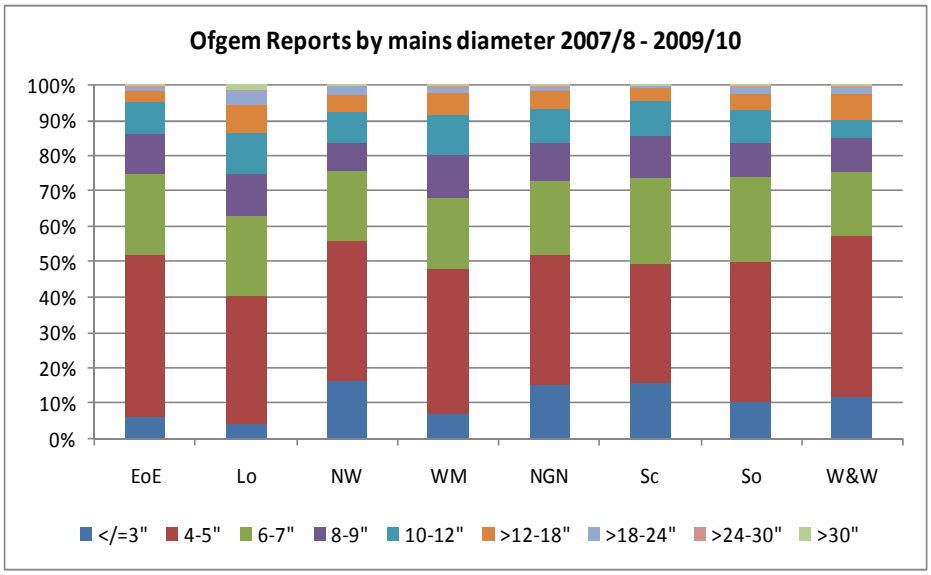
A.27 Based on Emergency opex costs of £10.77m in 2010/11, this represents an additional London productivity cost of £1.04m.

Repair – Diameter band

A.28 The diameter bands adjustment reflects the fact that London has a disproportionate number of larger diameter mains repairs, which take longer to repair than smaller diameter mains and so cost more.

A.29 The extent to which London Network has disproportionately larger mains repairs is shown in the chart below, using data from Ofgem's Repair regressions from 2007/8 to 2009/10.

Figure A.6: Reports by mains diameter 2007/8 – 2009/10



A.30 The chart shows that 60% of London Network's mains reports were on 6" or greater mains, as compared to the next highest 52% (West Midlands) with a non-London average of 48%.

A.31 The fact that larger mains are typically higher cost than smaller is reflected by Ofgem in repex and was also included by Ofgem in its Repair regression CSV from GDPCR1 until March 2011, when it was removed, the driver contained in the March paper giving an equal weight to all mains and services condition reports.

A.32 In order to quantify the size of the Network Specific Factor needed, we had to work out the change to the CSV caused by the new approach for each GDN. This was complicated by the fact that, for 2010/11 the number of reports by diameter band was not shown by the RRP. However, the number of repairs by diameter band was shown, together with ratios for repairs to reports for all mains work, and also all services work, which enables the number of reports by diameter band to be calculated.

A.33 Therefore, to compare like with like, we have:

- First, taken the number of repairs by diameter band for mains and also services, and multiplied up by the repair to report ratios from the RRP for 2010/11, in order to calculate the number of reports by diameter band.
- Second, using the results, calculated the scale of the CSV for each GDN.
- Third, applying Ofgem's former weights by diameter band or report, worked out how large the CSV would be using the former approach.
- Fourth, by comparing the results of the previous two steps, calculated the change in the CSV by applying weights to different diameter bands of reports.
- Fifth, using those results, multiplied by the expected level of cost from the March 2011 regression, to work out the adjustment needed to take account of different diameter bands for London Network.

A.34 Under the third point above, we have used Ofgem's diameter band weightings because they have the advantage of consistency, and generally appear reasonable.

A.35 The first two steps of the calculation for our GDNs are shown in the table below – the CSV is shown at the end of the table.

Figure A.7: Calculation of Reports by diameter band 2010/11

Repairs per RRP 3.15	East	london	North West	West Mids	**Total**
Mains (condition) </=3"	797	449	1,747	379	3,372
Mains (condition) 4-5"	5,877	3,665	4,355	2,752	16,649
Mains (condition) 6-7"	3,772	2,348	2,337	1,590	10,047
Mains (condition) 8-9"	1,549	1,185	925	1,008	4,667
Mains (condition) 10-12"	1,506	1,174	1,003	906	4,589
Mains (condition) >12-18"	388	697	573	424	2,082
Mains (condition) >18-24"	228	403	248	95	974
Mains (condition) >24"-30"	22	67	46	19	154
Mains (condition) >30"	10	94	18	29	151
Repairs to services (condition)	11,694	9,975	11,603	7,137	40,409
Total	**25,845**	**20,055**	**22,855**	**14,339**	**83,094**
Repair / report ratio (mains)	1.32	1.30	1.16	1.22	
Repair / report ratio (services)	1.01	1.02	1.02	1.01	
Calculated Reports					
Mains (condition) </=3"	606	345	1,509	311	2,770
Mains (condition) 4-5"	4,464	2,819	3,762	2,256	13,301
Mains (condition) 6-7"	2,865	1,806	2,019	1,303	7,993
Mains (condition) 8-9"	1,177	911	799	826	3,713
Mains (condition) 10-12"	1,144	903	866	743	3,656
Mains (condition) >12-18"	295	536	495	348	1,673
Mains (condition) >18-24"	173	310	214	78	775
Mains (condition) >24"-30"	16	52	40	16	124
Mains (condition) >30"	8	72	16	24	119
Repairs to services (condition)	11,628	9,826	11,424	7,071	39,949
Total	**22,376**	**17,580**	**21,143**	**12,975**	**74,074**
CSV Percentages	*30.2%*	*23.7%*	*28.5%*	*17.5%*	*100.0%*

A.36 The third calculation works out the CSV applying different weights to the different diameter bands of reports is shown below – the CSV resulting is shown at the end of the table.

Figure A.8: Calculation CSV using Reports by diameter band 2010/11

Weighted CSV calculation	**Ofgem weights**	**East**	**London**	**North West**	**West Mids**	**Total**
Mains (condition) </=3"	553.58	335,290	191,015	835,371	171,987	**1,533,663**
Mains (condition) 4-5"	594.58	2,654,474	1,675,835	2,236,683	1,341,328	**7,908,320**
Mains (condition) 6-7"	687.78	1,970,720	1,241,963	1,388,399	896,443	**5,497,525**
Mains (condition) 8-9"	1130	1,329,723	1,029,743	902,872	933,717	**4,196,054**
Mains (condition) 10-12"	1129.78	1,292,494	1,020,054	978,815	839,070	**4,130,433**
Mains (condition) >12-18"	1856	546,919	995,053	918,626	645,090	**3,105,687**
Mains (condition) >18-24"	1889	326,964	585,700	404,659	147,106	**1,464,430**
Mains (condition) >24"-30"	3846	63,277	199,196	152,817	59,902	**475,192**
Mains (condition) >30"	3846	30,003	277,259	59,798	91,429	**458,489**
Repairs to services (condition)	250	2,906,955	2,456,545	2,856,000	1,767,750	**9,987,250**
Total		**11,456,819**	**9,672,362**	**10,734,040**	**6,893,822**	**38,757,044**
CSV Percentages		*29.6%*	*25.0%*	*27.7%*	*17.8%*	*100.0%*

A.37 The fourth and fifth steps, under which we compare the scale of the CSV under the two approaches, and calculate the effect on the efficient level of cost, as represented by the average line from the March 2011 regression, are shown in the table below.

Figure A.9: Efficient cost impact of London's larger mains repairs 2010/11

	CSV				Cost		
	Weighted %	Unweighted %	Change %	Relative to unweighted	Line £m	Delta £m	9/10 prices
EoE	29.6	30.2					
London	25.0	23.7	1.3	5.2%	13.01	0.67	**0.64**
NW	27.7	28.5					
WM	17.8	17.5					
Total	**100.0**	**100.0**					

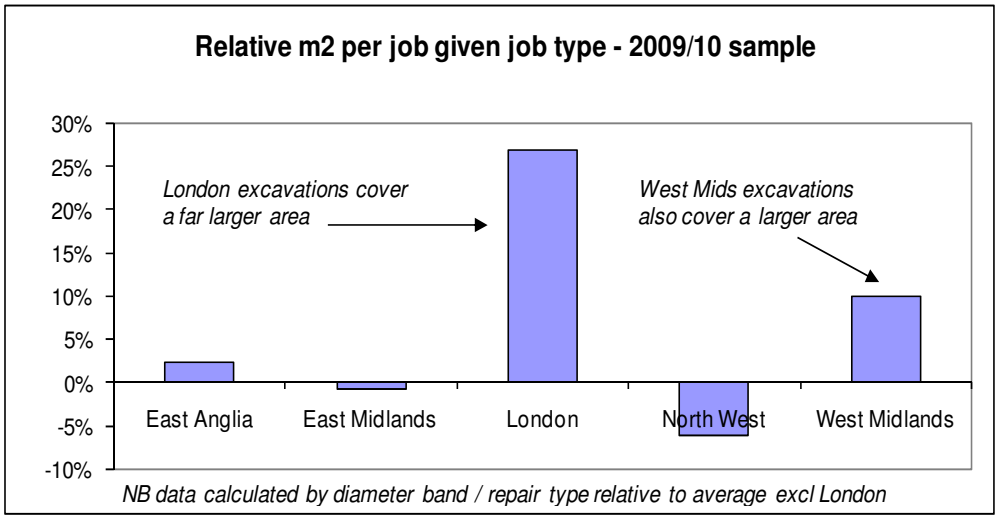
A.38 The table shows that, in our area the effect of applying the original diameter band driver, taking account of the increased time and cost associated with repairing larger mains, leads to a Network Specific Factor of £0.64m for London GDN.

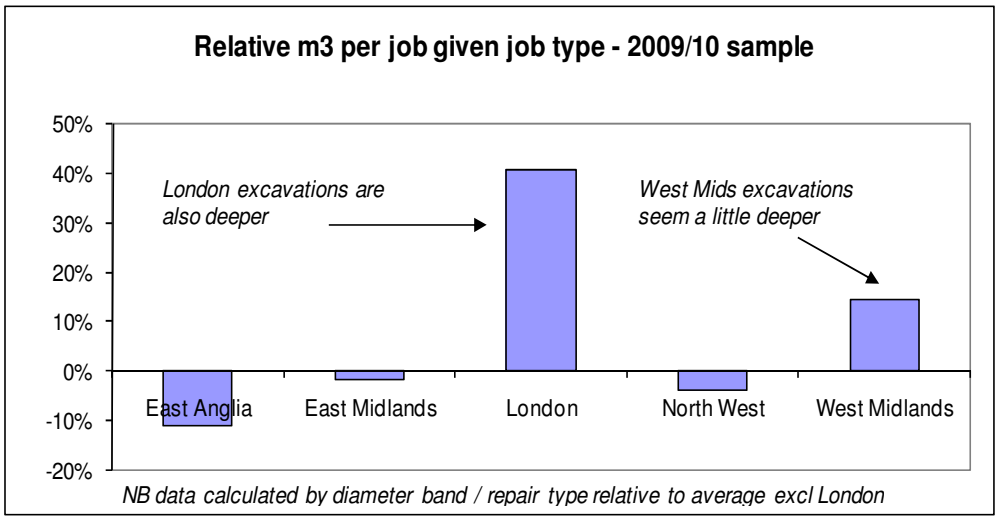
Repair - London hole sizes reinstatement

A.39 Excavation sizes are consistently materially larger in London Network than elsewhere for the same diameter band of repair. Using a sample of 37,000 Repair jobs from 2009/10, we obtained data on the number of excavations per job, the m2, m3 and depth of excavations. For London Network, the number of excavations per job is similar to elsewhere, but, excavations have a surface area around 27% larger, and the volume of excavations around 40% larger – therefore holes are not only wider but deeper.

A.40 This is shown in the two graphs below for area and volume.

Figure A10: m2 and m3 of excavations by operational unit 2009/10





A.41 In addition to London hole sizes being significantly larger than average, the graphs also show that West Midlands has larger excavations than average, given the diameter band of its repairs. However, the effect is far less than for London, and other data shows that it digs more holes per repair than average - for which we have not found a good explanation – so we do not claim a Network Specific Factor for West Midlands.

A.42 To calculate the extent to which London holes are deeper, London's average variance in depth for the different job types in the sample was fed through London GDN's Repair RRP workloads for 2009/10. This showed that London holes were 11% deeper than the other Networks. To verify this, a smaller sample of data was taken for the first 9 months of 2010/11, which showed the holes as being 7% deeper. Taking the average, we concluded that London holes were around 9% deeper than the average, having adjusted for the diameter band of its repairs, which we believe must represent an exogenous factor.

A.43 Having found that London excavations were wider than elsewhere, it was essential to understand why. It is because London Network uses JCBs to break open roads, and mechanical excavators make larger holes than the methods typically used in other Networks, hand tools or mini-diggers. JCBs are used in London, because unlike elsewhere, a significant proportion of jobs involve digging through reinforced concrete.

A.44 A 5 month trial in Hammersmith and Fulham showed that 27% of all repair jobs (including services) involved concrete. Further information from one of London's reinstatement contractors showed that while there was substantial variation between local authorities in the proportion of jobs involving concrete, it was not the case that areas further away from central London had less concrete. Indeed Thurrock, Southend and Essex (the southern part) all had more concrete than the average for London network.

A.45 Using JCBs has pros and cons. It would be expected to make it quicker than otherwise to dig down to the pipe, especially through concrete. However, it does make larger holes, and also incurs a JCB hire charge.

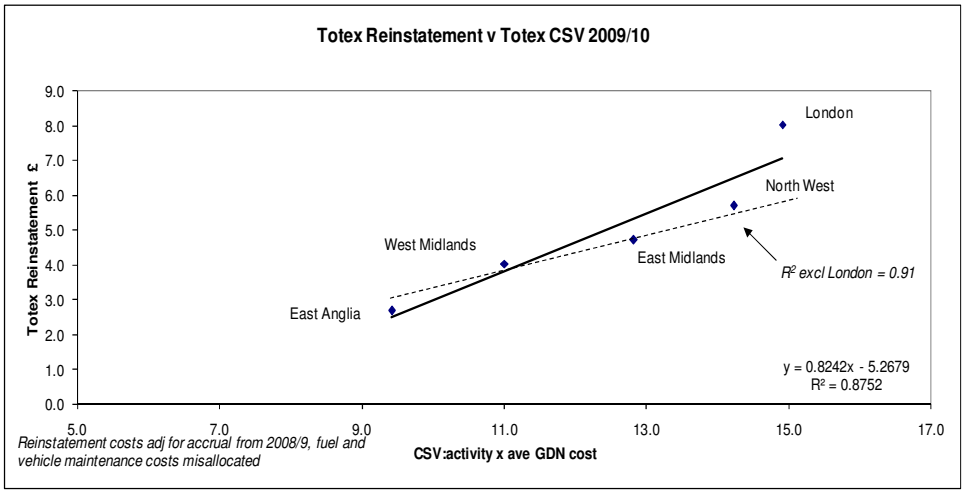
A.46 On balance, we do not suggest that the whole of the additional Reinstatement cost arising from JCB use should be funded by customers as a Network Specific Factor. Rather, we believe that the proportion which should be regarded as a Network Specific Factor is that which arises from repair jobs involving the excavation of concrete.

A.47 Consequently, we needed to assess the additional Reinstatement costs that arise from additional depth across all London Network, and a proportion of that arising from JCB use. Four separate calculations are involved:

- First, to find the additional cost of Reinstatement in London on a Repair Totex basis (i.e. all reinstatement costs incurred by Repair Teams, not just those which have been charged to Opex);
- Second, to find the proportion of JCB use which was reasonable;
- Third, assuming reasonable JCB use, to calculate how much larger London Network's excavations should be; and
- Fourth, to quantify that effect as the genuine Opex Network Specific Factor.

A.48 The first calculation took reinstatement costs for our Repair Process, adjusted for an accrual issue from 2008/9 plus some other misallocations to derive an underlying cost, and regressed against a CSV based on all the work carried out each Network (including Repex). The graph is shown below for the regression line calculated with and, more importantly without London, together with the numbers from the latter regression line for each network.

Figure A.11: Totex reinstatement regression by operational unit 2009/10



EXCL LONDON	Cost per line	Actual cost	Difference	% of line
East Anglia	3.0	2.7	0.3	10%
East Midlands	5.0	4.7	0.3	6%
North West	5.6	5.7	-0.1	-2%
West Midlands	3.6	4.0	-0.5	-13%
Total	**17.1**	**17.1**	**0.0**	**0%**
London implied	5.8	8.0	-2.2	-39%

A.49 Excluding London Network the chart shows a reasonable fit, but London is well off the line, exceeding the expected cost by £2.2m, or 39%.

A.50 The second calculation works out that proportion of the £2.2m additional cost which is a true Network Specific Factor. Although the proportion of concrete is similar between them, we needed to disaggregate London Network between Inner London, Outer London and Outside the M25 for the next stage of the calculation.

Figure A.12: London justified JCB use

	Jobs	Concrete %	Concrete jobs	Road jobs %	JCB use No	Justified JCB use %
	A	B	C = A x B	D	E = A x D	F = C / E
Inner	20	27%	5.4	38%	7.6	71%
Outer	49	27%	18.2	38%	18.6	71%
Out M25	31	27%	13.4	38%	11.8	71%
Total	**100**		**27.0**	**38%**	**38.0**	**71%**

A.51 The calculation works out the number of jobs where JCBs might reasonably have been used – concrete jobs, and compares that to the number of jobs on which we believe it was used – all road jobs. The answer for London Network i.e. the justified JCB use was 71%.

A.52 In respect of the sources of data:

- The split of job numbers between Inner London, Outer London and Outside the M25 was taken from the sample of 37,000 Repair jobs for 2009/10.
- The concrete proportion for Hammersmith and Fulham was found in the 5 month trial to be 27%, which is assumed to be typical of Inner London: the concrete proportion for Outer London and Outside M25 figures were found to be similar using data from FERNs reinstatement contractors.
- The proportion of jobs in the road (38%) was found from a sample of 250 mains and services repair jobs from the first 9 months of 2010/11.

A.53 The third calculation works out the extent to which London Network hole sizes should, if JCBs were used only on concrete, be larger than in other Networks, for a given diameter band.

Figure A.13: London justified additional hole sizes

	Average extra m2 + m3 %	9% extra depth	Extra size - non depth %	Justified JCB use %	Justified extra size	Jobs	Size effect	Justified extra size %
	A	B	C=A-B	D	E=(CxD)+B	F	G=Fx(1+E)	H=G/F
Inner	40%	9%	31%	71%	31%	20	26.3	131%
Outer	32%	9%	23%	71%	25%	49	61.3	125%
Out M25	32%	9%	23%	71%	25%	31	38.7	125%
Total						**100**	**119.3**	**126%**

A.54 The calculation shows that London Network's hole sizes, and so, Reinstatement costs, would reasonably be expected to be 26% above those of other Networks, given the same diameter bands of repair.

A.55 In respect of the sources of data:

- The average additional m2 and m3 for the 3 areas of London Network were calculated from the sample of 37,000 Repair jobs in 2009/10.
- The data in columns D and F were sourced from the second calculation above.

A.56 The final element of the calculation brings together the earlier elements. It starts with the actual additional London reinstatement costs, takes the justified proportion of these (26% out of the 39% additional cost), removes the amount attributable to Repex and Capex to reveal the Opex amount, before finally making the Tottenham/Outer Met adjustment.

Figure A.14: Value of London justified additional hole sizes

	£m
Additional London Totex Reinstatement	2.2
Justified extra proportion	26% / 39%
Justified £m	1.47
To Capex / Repex	-0.64
Justified Opex	0.83
Outer Met adjustment to East	-0.07
Valid extra London GDN Opex	**0.75**

A.57 The table shows that the reasonable hole sizes Network Specific Factor adjustment is £0.75m for London Network.

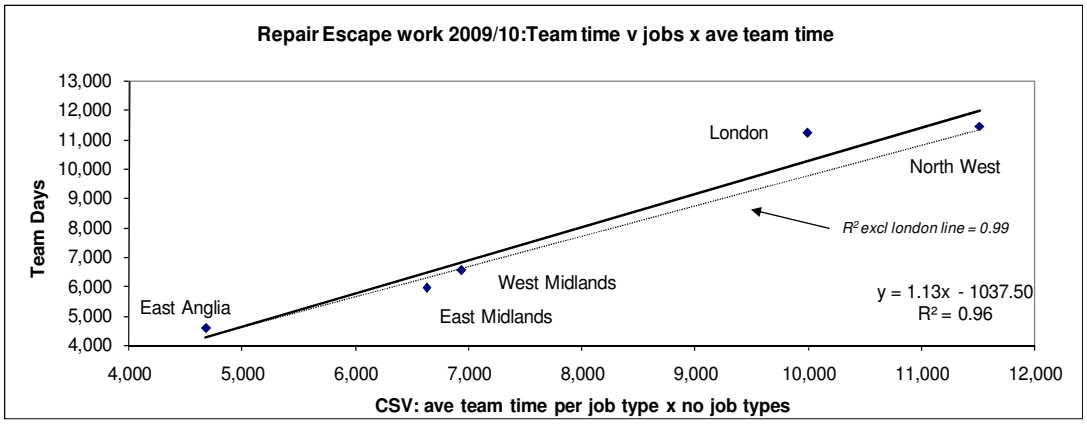
Repair - London job times

A.58 London network has a more difficult working environment than the other Networks. Excavations are typically deeper, underground congestion is an issue in parts of the capital, making excavation more difficult, the number of basements and many flats can lead to it taking longer to apply Osgem rules and to pinpoint the precise location of the escape (see also paragraphs 2c.23 – 2c.33) under Emergency Network Specific Factors).

A.59 The result of all these factors is that Repair teams take longer to carry out Repair work in London, for a given diameter band of Repair.

A.60 The regression below compares, for the sample of 37,000 Repair jobs for 2009/10, the actual Team Time by Network as compared to a CSV made up of the product of the average Team Time for each individual diameter band of repair and the number of jobs.

Figure A.15: Repair team times regression by operational unit 2009/10



EXCL London	Days per line	Actual Days	Difference	% of line
East Anglia	4,284	4,562	-278	-6%
East Mids	6,296	5,944	352	6%
North West	11,336	11,449	-113	-1%
West Mids	6,595	6,555	40	1%
Total	**28,510**	**28,510**	**0**	**0%**
London implied	9,755	11,226	-1,471	-15%

A.61 The graph and the table show that, given the diameter bands of work, the Repair teams in 4 of our 5 Networks take very similar amounts of time to carry out Repairs. The exception, taking 15% longer than the others given the diameter bands of its work, is London Network.

A.62 To make sure that the cause of the additional London time was not disrupted work patterns – i.e. Repair Teams completing part of a job before being called elsewhere, and

so needing multiple visits to complete a job - we compared the number of Team visits by Network for the different diameter of Repair. The result was that London was exactly on the line of the expected number of visits – work patterns were not disrupted - each visit was just longer.

A.63 It should also be remembered that the use of JCBs should make the Repair gangs faster – digging mechanically being faster than using hand held tools. If JCBs were not used in the road, this would be expected to increase the additional time associated with carrying out Repairs in London.

A.64 We concluded that the additional Team time per job in London was due to the environmental factors associated with working in London.

A.65 Next, we needed to calculate the cost of this Network Specific Factor. First, based on standard work time for work done in 2009/10 compared to available resource, we calculated that Escape related work should have taken up around 63% of London Teams' available time. Applying the 15.1% uplift to that proportion of London time shows that payroll type costs were a factor of 1.095 higher than they would otherwise have been from this cause, as shown below.

Figure A.16: Calculation of Repair productivity impact on all London time

London Network	Std Work time	15.1% extra escape time	London costs high by
Escape work	63	72.5	
Non-escape work	37	37	
Total	**100**	**109.5**	**1.095**

A.66 The result was then applied to London's actual annualised resource costs (industrials and contractors), to produce an Opex Network Specific Factor.

Figure A.17: Value of Repair productivity impact on London time

	£m
Network resource costs (9/10)	**13.94**
Additional element	9.5%
Normalised resource costs	12.73
Additional cost	1.21
Transferred to Repex	-0.47
London Network Opex element	0.73
Outer Met adjustment (to East)	-0.07
London GDN Opex Regional Factor	**0.67**

A.67 Consequently we calculated that the excess Opex cost of London Repair's working environment was £0.67m.

Repair - JCB and Mini-digger hire

A.68 As described under London Hole-sizes above, London Network uses JCBs to break-open roads, whereas other Networks use mini-diggers or hand tools, and, although there are pros and cons associated with JCB use, we believe that around 71% of the JCB hire can reasonably be justified due to the presence of concrete.

A.69 In this Network Specific factor, we have calculated the reasonable additional cost of London hiring mechanical diggers (largely JCBs) as compared to other Networks, allocated to Repex and Capex, and then made the Tottenham/Outer Met adjustment.

A.70 The figures are for 2010/11 but shown in 2009/10 prices.

Figure A.18: Value of London additional JCB and digger hire - opex

Network 2010/11	Totex JCB hire	London disallowed (29%)	Allowed JCB hire	Mini-digger hire	Allowed hire	To Repex / Capex	Opex
	£m	£m	£m	£m	£m	£m	£m
East Anglia	0.03		0.03	0.12	0.15	-0.09	0.06
East Midlands	0.14		0.14	0.02	0.16	-0.09	0.08
London	0.91	-0.27	0.64	0.02	0.66	-0.35	0.31
North West	0.03		0.03	0.07	0.10	-0.05	0.05
West Midlands	0.00		0.00	0.01	0.01	-0.01	0.00
Total	**1.11**	**-0.27**	**0.85**	**0.25**	**1.10**	**-0.59**	**0.51**

GDN	Opex	Outer Met	Opex
	£m	£m	£m
East	0.14	0.03	0.17
London	0.31	-0.03	0.29
North West	0.05		0.05
West Midlands	0.00		0.00
Total	**0.51**		**0.32**

A.71 The London GDN Opex cost of £0.29m is £0.12m above that of the next highest cost Network (the sum of East Anglia and East Midlands being £0.17m), consequently our London Network Specific factor for JCB and mini-digger hire is £0.12m.

Indirect - Property

A.72 We rent around 100 properties on which market rents are payable. A small number of these, such as Warwick, provide centralised services for many of the NG group of companies. The vast majority by number are sites such as depots which are embedded within a network and provide services wholly or largely to that network.

A.73 It is this latter group for which we believe a Network Specific Factor exists. External evidence from IPD demonstrates that market rents for properties in London, weighted between Inner and Outer London based on repair workload, are around 136% of the average excluding London and Southern.

A.74 In respect of London other external benchmarking from TOC showed London costs being 129% of the average.

A.75 Consequently we have applied an adjustment representing the average of these 2 benchmarked figures i.e. that an efficient level of London property costs represents 132% of the average.

A.76 The IPD data shows the remainder of our GDNs show a relative cost of between 99% and 102% of the average excluding London and Southern, so we only propose a company specific adjustment for London network.

A.77 The quantification of the Network Specific Factor is shown in the table below.

Figure A.19: Value of London additional operational property cost

2010/11	
Actual London rental cost	1060k
Uplift	132%
Normalised cost	802k
London network uplift	258k
In 2009/10 prices	246k
Outer Met to East GDN	22k
London GDN	224k

A.78 The table shows that the London Network Specific Factor for property is £0.22m

Section 3: Repex

A.79 Our network specific factors for repex are summarised in the table below.

Figure A.20: Summary of London repex Network Specific Factors

Summary Repex Factors	Reference	IP Bottom Up	IP Top Down	NGGD
Base repex productivity	A.81	15%	15%	20.3%
MP replacement repex	A.121	£13.0m	£0m	£13.0m
MP replacement upsized	A.130	£2.2m	£0m	£2.2m
MOBs	A.134	£8.0m	£0m	£8.0m

A.80 Each subject is addressed in turn.

Base repex productivity

A.81 IP contained 15% labour productivity uplift on work carried out within the M25. This was based on the low end of a 15%- 20% range obtained from Scotia.

A.82 Our previous work on repex network specific factors was aimed at quantifying the approximate impact of these factors in £m over the RIIO period, based on our Business Plan workloads.

A.83 Ofgem's approach in IP was different, and easier to apply to workload variations, in that it applied % uplift to the labour element of repex alone, and only on that element of work assumed to be within the M25.

A.84 Based on repex work carried out in 2010/11, excluding MOBs and the MP programme (the latter not being present in 2010/11), our evidence suggests that a reasonable level of uplift for labour within the M25 is 20.3% - up from the 15% assumed at IP, and slightly above top of Scotia's range.

A.85 The calculation behind this is shown in the table below, but the logic is as follows:

- Start with main network factors from April update, excluding pay
- Adjust for two items:
  - Restate those factors which had previously been quantified using RIIO averages rather than 2010/11 costs.
  - Increase the labour element of one adjustment to be based on a 80% labour element of repex, rather than 70%, as per our note dated 21 June 2012.

- Compare to London repex costs in 2010/11 less MOBs (considered separately) – our factors represent 9.3% of London repex
- Find that the urban productivity adjustment in IP's Total Repex sheet represents 6.9% of the Normalised cost (2)
- Uprate the 15% IP uplift by 9.3 / 6.9 to give 20.3%.

Figure A.21: Base repex productivity calculation

2009/10 prices		April Update £m	Move from RIIO to 10/11 £m	2010/11 £m
Hole sizes	ex Repair	0.5		0.5
Job times	ex Repair	0.4		0.4
JCB use	ex Repair	0.2		0.2
Risers	ex Repair	0.3		0.3
Tipping	Replacement	0.3		0.3
Hole sizes - labour	Replacement	7.3	0.6	7.9
Hoes sizes - materials	Replacement	2.1	-0.6	1.5
Network factors		11.0	0.1	11.1
London repex cost in 2010/11				127.7
less MOBs				-9.3
London repex cost in 2010/11 less MOBs				118.4
London network factors (above)				11.1
London network factors % repex less MOBs				9.3%
Ofgem productivity adjustment RIIO average (v Normalised cost 2)				6.9%
Increase in London Network adjustment required (9.3 / 6.9)				1.35
Ofgem initial labour productivity uplift in M25				15%
Required labour productivity uplift (1.35 x 15%)				20.3%
Additional allowances needed for MP work (not present 2010/11) and MOBs				

A.86 Support for a 20.3% labour uplift is given by the fact it is very close to the top of the range identified by Scotia.

A.87 Furthermore, London Network within the M25 clearly has a more dense population than Scotia, which would be expected to exacerbate urban productivity issues. We can shows this using the local authority and county data provided by Ofgem for the sparsity adjustment, as shown below.

Figure A.22: London population density - London v Southern (Ofgem data)

Ofgem population and area data - Inner and Outer London							
	2010 population		Area		Density	Density	London
	Southern	London	Southern	London	Southern	London	multiple
	Thousand	Thousand	km squared	km squared	per km	per km	times
Inner London	822	2,111	93	206	8,876	10,231	
Outer London	1,632	2,700	454	689	3,592	3,920	
All London	2,454	4,811	547	895	**4,486**	**5,374**	**1.20**

A.88 Ofgem's data shows that, taking the areas of Inner and Outer London only, NGGD's area has a population density which is 20% more than that of Scotia, which supports London Network being at the top end of Scotia's productivity range.

A.89 Turning to the details of the individual items making up our £11.1m of network factors for 2010/11, these are explained in turn below.

Repex ex Repair - London Hole Sizes Reinstatement

A.90 The Opex Network Specific Factors Appendix (A5.1a) explained that London excavations carried out by Repair teams were larger than elsewhere because holes were around 9% deeper and also because JCBs were used in the carriageway, a process which could be justified objectively around 71% of the time due to the presence of concrete. The result of the calculation was that holes sizes in London would be expected to be around 1.26 times the size of other Networks.

A.91 The Opex Appendix showed that the justified additional cost for the whole Repair process was £1.47m, of which £0.53m relates to Repex activities. The Tottenham / Outer Met adjustment transfers 9% to East Anglia, leaving £0.48m in London Network.

Repex ex Repair - London Job Times

A.92 The Opex Network Specific Factors Appendix (A5.1a) described how London Repair Teams take 15% longer to complete Escape related work than elsewhere due to its more difficult working environment. Excavations are deeper, underground congestion is an issue in parts of the capital, making excavation more difficult, the numbers of basements and many flats can lead to it taking longer to apply Osgem rules and to pinpoint the precise location of the escape.

A.93 Appendix A5.1a shows that London Network's costs would be expected to be 9.5% above those elsewhere from these causes, with a totex cost of £1.21m. Of this £0.47m relates to Repex activities (i.e. relay after escape), of which the Tottenham / Outer Met adjustment transfers 9% to East Anglia, leaving £0.43m in London GDN.

Repex ex Repair - JCB and mini-digger hire

A.94 As described under London Hole sizes above, London Network uses JCBs to break open roads, whereas other Networks use mini-diggers or hand tools, and we believe that around 71% of the JCB hire can be justified due to the presence of concrete.

A.95 The table below sets out the adjustment required by GDN in respect of JCB and mini-digger hire.

Figure A.23: Value of London additional JCB and digger hire - repex

Repex	Cost*	line	NGGD cost	Cost recut	Delta	9/10 prices
JCB / mini diggers	£m	%	£m	%	£m	£m
East	0.198	31.1%	0.554	0.172	0.025	**0.024**
London	0.301	21.7%	0.554	0.120	0.181	**0.172**
North West	0.050	28.0%	0.554	0.155	-0.105	**-0.100**
West Midlands	0.005	19.2%	0.554	0.106	-0.101	**-0.096**
Total	**0.554**	**100.0%**		**0.554**	**0.000**	**0.000**

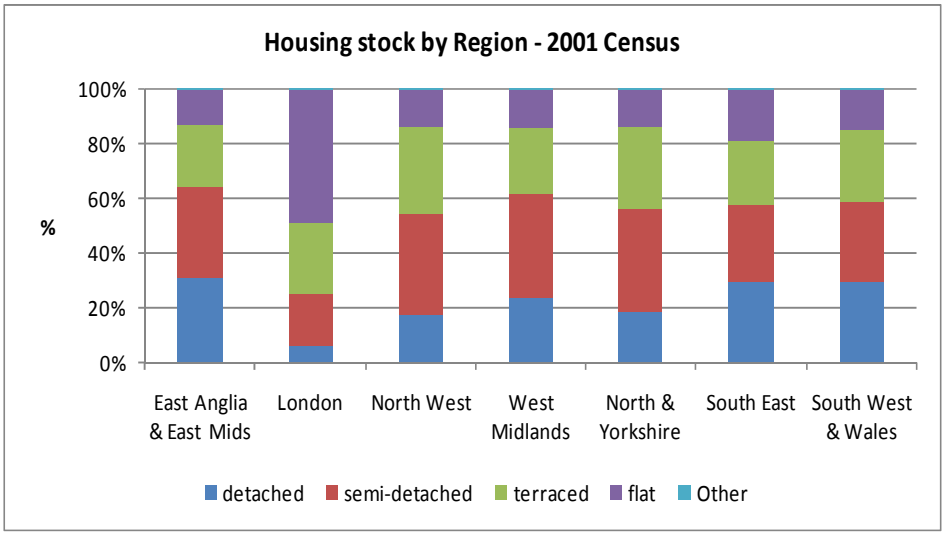
* post outer met adj

3.1 As would be expected the largest adjustment is for London GDN and amounts to £0.17m.

Repex ex Repair - Riser manifolds

A.96 London Network, unlike the other Networks, has a significant population of several storey buildings, with purpose built and converted flats making up 49% of the housing stock – per the 2001 Census, table KS16. The Region with the next highest proportion of flats is South East, with only 19% flats. The different make-up of the housing stock across England and Wales is highlighted in the chart below.

Figure A.24: 2001 Census Housing stock by region



A.97 Because of its high number of flats, London Network has a significant need for manifolds when carrying out relay after escapes, which allow the service pipe to branch off to individual properties. The cost of these manifolds in 2010/11, procured from a company named K&S pipelines was £0.324m in nominal prices, which is £0.309m in 2009/10 prices. The Tottenham / Outer Met adjustment transfers 9% of cost to East Anglia, leaving London Network with £0.28m of additional Repex.

Replacement Repex - Increased Hole Sizes - labour

A.98 In our November plan we included an estimate of the additional reinstatement cost to London network caused by the effect of London's pipes being on average 9% deeper than those elsewhere.

A.99 Since then we have carried out further work to assess what the additional labour requirement is in respect not only of reinstatement but more importantly of excavation.

A.100 The calculation needed to be performed in a number of steps:

- First, to work out the relationship between depth and surface area – it would be expected that deeper holes would also be wider holes, but we needed to quantify this.
- Second, using the result of step 1 to calculate how much the volume (m^3) of excavations would be expected to be increased by London's 9% greater pipe depth.
- Third, to work out the additional labour cost which would be expected to result over the RIIO-GD1 period.

A.101 Step 1, the relationship between depth and volume was approached using the data previously used in paragraphs 3c.3 to 3c.21 - Repair hole sizes - of Appendix 5.1a of our November plan. This consists of over 50,000 job samples from 2009/10 and the first 9 months of 2010/11. Note that we excluded London network data as this would be liable to distort the answer – these pipes being deeper than elsewhere, and due to the increased use of JCBs which alters hole sizes in London's repair process.

A.102 The figure below shows that, taken from the 3" start point, as pipes have larger diameters they become deeper in the ground, and that the m^2 of excavations also increases – deeper holes being wider. Crucially it demonstrates that the m^2 increases more quickly than depth, as pipes go deeper. For example, in 2009/10, an excavation for an 8-12" pipe had a depth 1.27 times that of a 3" pipe, but its surface area was 1.45 times as large.

A.103 Consequently, the pipes in London, which are 9% deeper than elsewhere, would be expected to require excavations which have a surface area more than 9% larger, which impacts not only excavation time, but also reinstatement time and costs.

A.104 The figure ends by showing the multiple in growth in m^2 as compared to increase in depth for the different diameter bands of pipe.

Figure A.25: Relationship between depth and m^2

Raw data	2009/10 Non London m2 per hole	2009/10 Non London depth per hole	2010/11 (9m) Non London m2 per hole	2010/11 (9m) Non London depth per hole
Find & Fix Escapes-<3	1.02	0.64	1.01	0.64
Find & Fix Escapes->3<6	1.13	0.73	1.10	0.74
Find & Fix Escapes->6<8	1.32	0.76	1.27	0.79
Find & Fix Escapes->8<12	1.48	0.82	1.37	0.84
Find & Fix Escapes->12<18	1.67	0.86	1.48	0.87
Find & Fix Escapes->18<24	2.06	0.95	1.76	0.89
Find & Fix Escapes->24<30	2.43	1.08	2.15	1.02
Find & Fix Escapes->30	2.58	1.01	2.26	1.03
Increase in m2 and depth compared to <3 inch				
Find & Fix Escapes-<3	100%	100%	100%	100%
Find & Fix Escapes->3<6	111%	113%	109%	116%
Find & Fix Escapes->6<8	129%	118%	125%	124%
Find & Fix Escapes->8<12	145%	127%	135%	132%
Find & Fix Escapes->12<18	163%	134%	146%	138%
Find & Fix Escapes->18<24	202%	148%	173%	141%
Find & Fix Escapes->24<30	238%	168%	212%	160%
Find & Fix Escapes->30	253%	157%	223%	163%
Relationship of m2 and depth multiples to 3"	**2009/10**	**2010/11**	**average**	
Find & Fix Escapes-<3	n/a	n/a	**n/a**	
Find & Fix Escapes->3<6	0.98	0.94	**0.96**	
Find & Fix Escapes->6<8	1.09	1.01	**1.05**	
Find & Fix Escapes->8<12	1.14	1.03	**1.08**	
Find & Fix Escapes->12<18	1.21	1.06	**1.14**	
Find & Fix Escapes->18<24	1.37	1.23	**1.30**	
Find & Fix Escapes->24<30	1.42	1.33	**1.37**	
Find & Fix Escapes->30	1.61	1.37	**1.49**	

A.105 Having calculated the multiple between increased pipe and m^2 of excavations, it was necessary to apply the results to London network's replacement programme, which is done in the table below. We needed to exclude 3 inch pipes from the table, as it was the starting point for our analysis above – fortunately it only represents around 2% of London's workload.

Figure A.26: Depth / m^2 multiples applied to London replacement programme

RIIO London Replacement workloads	m2 / depth multiple	RIIO workload proportion	product	London depth to m2 multiple
Mains -<3	n/a	n/a	n/a	
Mains ->3<6	0.96	0.45	0.43	
Mains ->6<8	1.05	0.25	0.27	
Mains ->8<12	1.08	0.15	0.16	
Mains ->12<18	1.14	0.03	0.03	
Mains ->18<24	1.30	0.06	0.08	
Mains ->24<30	1.37	0.04	0.05	
Mains ->30	1.49	0.00	0.00	
		0.98	**1.02**	**1.045**
Holes that are 9% deeper should have a m2 which is 14% larger (1.09 x 1.045) plus an m3 which is 24% larger (1.14 x 1.09)				

A.106 The table shows that, given London's replacement workload, a m^2 to depth multiple of 1.045 should apply. Therefore, as London pipes are 9% deeper, the surface area should be 14% larger (1.09 x 1.045), and crucially the m^3, or excavation size, around 24% larger (1.14 x 1.09).

A.107 The third step is to work out the additional labour cost associated with 24% larger excavations. The calculation takes London network's mains and services replacement costs, excluding MOBS and RAE (as the effects on RAE have already been considered under repex from Repair activities), takes the direct labour proportion (direct as in the opposite to indirect) and multiplies by the proportion of their time spent carrying out activities directly related to hole sizes i.e. excavating and reinstatement.

A.108 This figure of 66% came from three different sources, being two Alliance managers and one Repair manager, who all carry out a good deal of replacement activity. All their responses were in the range of 60% to 70%, so we chose 66% as the answer. This seems fairly prudent, given that we have not assumed any increase in indirect labour time due to larger hole sizes.

A.109 The calculation then quantifies what the impact of the 24% larger hole sizes is p.a

A.110 We have updated the calculation from the version contained in the April Update in two respects:

- The cost figures are now taken from 2010/11 rather than RIIO Business Plan averages – this makes the calculation of the % impact of our repex network specific factors far easier.
- The April version of the calculation used a labour element (excluding indirect labour) of 49% rather than the 57% shown below. This change was made because, as contained in our note to you dated 21 June 2012, we believe that a labour element of

80%, as compared to 70% is more consistent with iDN data and treating reinstatement as labour.

A.111 The calculation is shown below.

Figure A.27: Depth / m^2 multiples applied to London replacement programme - labour

London Network - 2009/10 prices	£m
Repex 10/11	127.7
less MOBs and RAE	-19.8
2010/11 mains and services replacement	107.9
Labour (i.e. excl indirect labour) - uprated	57%
% time excavating / reinstating	66%
Labour excavating / reinstating £m	40.7
Size of uplift (1.24x) £m	**7.9**

A.112 The table shows that, for the year 2010/11, London network's mains replacement costs were increased by £7.9m p.a. due to larger hole sizes, due to increased pipe depth.

Replacement Repex - Increased hole sizes – materials excluding pipe

A.113 We have demonstrated above that the consequence of increased pipe depth in London Network is a 24% increase in relative hole sizes. This has a knock-on effect on materials costs, excluding pipe, which make up around 7% of repex cost.

A.114 The calculation for this Network factor for the year 2010/11 is set out in the figure below. Note that in the April Update we presented a RIIO average figure. We have amended our presentation so as to make it easier to show a % impact of all repex network factors.

Figure A.28: Depth / m^2 multiples applied to London replacement programme – materials

London Network - 2009/10 prices	£m
Repex 10/11	127.7
less MOBs and RAE	-19.8
2010/11 mains and services replacement	107.9
Materials (excl pipe)	7%
Materials cost	7.6
Size of uplift (1.24x) £m	**1.5**

A.115 The table shows that the new network specific factor for London's additional costs for materials as £1.5m p.a. for the year 2010/11.

Replacement Repex - Tipping

A.116 Tipping charges including landfill tax are significantly higher in the London area than elsewhere in the country. The average cost per tonne incurred by the London Alliance was £14.14 as compared to an average of £8.68 per tonne in NGG's areas as a whole.

A.117 Tipping costs should be considered a valid exogenous factor, as there would be a significant cost in avoiding them – with tipping lorries driving much further distances in order to reach tips with lower charges.

A.118 From our analysis on London hole sizes (see above) we have demonstrated that London pipes being 9% deeper than those elsewhere would be expected to increase the m^3 excavated by 24%.

A.119 Using data from the Alliances from 2010/11, we can calculate the additional cost to London Network from the combination of additional spoil volumes and higher tipping charges, as shown below.

Figure A.29: Depth / m^2 multiples applied to London replacement programme – materials

	Tonnes	£ / tonne	Cost	Lon tonnes	24% vol adj	Adj tonnes	Ave £/tonne	Adj cost	Delta	2009/10
	No.	£	£'000	No.	No.	No.	£	£'000	£'000	prices £k
EoE	152,388	7.17	1,093							
Lo	39,892	**14.70**	586	39,892	-7,721	32,171	**8.68**	279	307	**292**
NW	66,074	7.76	513							
WM	30,270	10.38	314							
	288,624	**8.68**	2,506							

A.120 We calculate the additional cost below for 2010/11 as £292k.

Replacement Repex - Medium Pressure Tier 2 Mains Replacement

A.121 As part of our replacement expenditure we have included replacement of our medium pressure (MP) network within London. This work is expensive – the cost excluding streetworks is £148m, and the unit cost per km is over 3 times that of comparable low pressure (LP) mains in London – which is one of the main reasons why London repex appears high cost, relative to other networks. This work has been justified on the back of a cost benefit assessment as described in Appendix 8.4 (section 3g) of our November business plan.

A.122 The work covers areas of Inner London such as Battersea, Fulham, Hyde Park and Islington.

A.123 We were aware that this work, due to its location and nature, would present unique challenges, which is why we carried out a bottom-up costing exercise on the MP work to inform our cost benefit analysis. Some of these reasons for the increased cost are as follows:

- 800mm replacement – these schemes have 7km of 800mm PE. In recent history (the last twenty years) we have not laid any 800mm in mains replacement. The greater size will mean significantly larger excavations, higher material costs for the pipe, fixtures and fittings and additional expert certification of the 800mm pipe and each type of fitting. Additionally the handling and storage of such pipes is a significant cost. This has a significant impact in the >630mm band.
- Due to the network configuration of the mains and restriction on road space it will be necessary to carry out the work in short sections, which will require additional large diameter connections. Due to operating pressure, these will be implemented using Stopple flow stopping techniques as compared to Iris Stop, which increases the cost of working.
- There are many rail and river crossings associated with these works, some of which are located in highly congested parts of inner London. These will require major civil engineering projects to be completed in advance of the mains replacement schemes.
- The MP system around central London has internal seals every 1.8m which need to be removed prior to any insertion, which has a number of impacts. First, there is the direct cost of specialist engineers entering the pipes and removing the seals, second they require frequent digging down to reach them – adding to excavations i.e. there are more excavations and shorter “pushes” reducing productivity. Third, the impact of traffic management considerations combines with more excavations to further reduce productivity.
- The routes present transportation and pipe storage problems e.g. typically there will be little or no room for site storage meaning frequent deliveries through central London traffic. Not only does this impact transport costs but it will also impact productivity.
- The bespoke nature of these projects means that we will need to deploy a single project team to each project which is wholly devoted to managing that project.
- Stakeholder engagement will be key due to the traffic sensitivity of routes, density of population and the scale and importance of businesses and other institutions in these locations. This will lead to additional stakeholder engagement costs for the project team before and during construction.
- The need for us to provide continuity for third party businesses is also important. We are obliged to mitigate the impact of our works, for example by boarding footpaths, use of fencing, installing bespoke signage, providing specialist shuttering to leave access, and even trying to arrange work in sympathy with their needs. These have a direct cost but also impact productivity.

A.124 There are clearly many features of the MP work which act to increase its costs. A more detailed description of the work and assessment process was described in section 3g of Appendix A8.4 – 'Replacement Expenditure' of our November plan.

A.125 In order calculate the network specific factor we have excluded streetworks from the costs, and then compared, by diameter band, the cost of MP work to the cost of LP work in London network.

A.126 The calculation is shown in the figure below.

Figure A.30 - London MP additional cost

London RIIO-GD1	London LP Mains Repex			London MP Mains Repex					
MP v LP costs	Lay	Cost	Unit rate	Lay	Cost	Unit rate	MP km at LP rate	Delta	Annual
2009/10 prices	km	£m	£m/km	km	£m	£m/km	£m	£m	£m
<=75mm	707	97.0	0.14	0.3	0.0	0.11	0.0	0.0	0.00
>75mm to 125mm	1,190	159.9	0.13	0.1	0.0	0.42	0.0	0.0	0.00
>125mm to 180mm	647	122.5	0.19	0.0	0.0	0.00	0.0	0.0	0.00
>180mm to 250mm	263	60.2	0.23	1.2	0.5	0.41	0.3	0.2	0.03
>250mm to 355mm	127	64.7	0.51	2.4	1.5	0.60	1.2	0.2	0.03
>355mm to 500mm	142	78.3	0.55	24.7	30.4	1.23	13.6	16.8	2.10
>500mm to 630mm	57	25.6	0.45	44.9	83.0	1.85	20.0	63.0	7.87
>630mm	25	21.2	0.84	9.9	32.0	3.23	8.3	23.7	2.96
Total	**3,159**	**629.3**	**0.20**	**83.6**	**147.5**	**1.76**	**43.5**	**104.0**	**13.00**

A.127 The calculation shows that the additional cost to London network of its MP replacement work is £13.0m p.a. Note that this above the £10.93m stated in our April Update, as we removed the London pay uplift from that figure, which is now removed subsequently by Ofgem.

A.128 In addition to the pay and other smaller adjustments we set out in Appendix 5.1c of the November plan, we have identified a network specific factor in respect of mains reinforcement in the RIIO-GD1 period, a consequence of the London repex programme.

A.129 We plan to lay 5.4km of 630mm pipe in central London, including a £3.6m crossing of the Thames, using steel instead of PE due to proximity to buildings (we are allowed to lay steel in far closer proximity to buildings than PE). The cost of £3.5m per km is 9 times that of the other LP mains reinforcement above 180mm which London network plans to carry out, excluding streetworks.

Medium Pressure Tier 2 Mains Replacement Upsizing

A.130 The issues around the cost of the project are similar to those described under the MP London repex network specific factor – see paragraph a4.51 a4.57. Full details of the projects are provided in the November plan, section 3g of Appendix 8.4 – 'Replacement Expenditure'.

A.131 To calculate the size of the network specific factor we compared the unit cost per km with of the MP >180mm with that of London network's LP >180mm, excluding streetworks. Then we calculated the excess cost of the MP reinforcement, before making an adjustment to reflect the fact that we have already assumed a 30% pay uplift for London. The calculation is set out in the figure below.

Figure A.31 - London MP network specific factor calculation

London RIIO-GD1	LP Mains Reinforcement			MP Mains Reinforcement					
MP v LP costs	Lay	Cost	Unit rate	Lay	Cost	Unit rate	MP km at LP rate	Delta	Annual
2009/10 prices	km	£m	£m/km	km	£m	£m/km	£m	£m	£m
>180mm	11	4	0.38	5.5	19.3	3.54	2.1	17.2	2.16

A.132 The figure shows that the London MP mains reinforcement adjustment is £2.2m p.a. over the RIIO period. This is above the £1.8m identified in the April Update, as we have not removed the London pay uplift here, because Ofgem remove it subsequently.

A.133 Although it appears that the unit costs of MP reinforcement is significantly higher than that of LP reinforcement we are comparing apples with pears. As well as the higher costs associated with the location (for example the Thames crossing) and pressure Tier, the comparison is also from LP mains reinforcement at predominantly a far smaller diameter band than the 630mm MP reinforcement.

MOBs

A.134 MOBs needs to be added back after the Totex regressions – at present, although the cost associated with this work is allowed in the bottom-up analysis, it has been included in the cost data fed into the Totex calculations, with no associated driver, and so 100% disallowed in those regressions. This is worth £8m p.a. to London Network over the RIIO period.

Section 4: Capex

A.135 Our major network factor on capex was in respect of capitalised Medium Pressure upsizing. Because Ofgem has transferred this to repex, we have described this issue in the Repex section above.

A.136 In respect of other capex, we agree that the productivity issues associated with extreme urban density apply equally to mains and connections, as well as repex. Therefore we support the application by Ofgem of the repex productivity adjustment to mains and connections also, as per paragraph 1.13 of the Cost Efficiency document.

A.137 We would point out however, that in the detailed modelling, this adjustment does not appear to have been applied to mains reinforcement.