Ofgem

Gas Distribution Cost Reporting

Report

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Contents

1. EXECUTIVE SUMMARY

The Gas Distribution Price Control Review for the period 2008 to 2013 set the price control, which specifies the maximum revenue that the owners of the eight licensed gas distribution networks (GDNs) can recover from their customers.

As part of monitoring performance during the price control period, Ofgem carries out annual reviews based on Regulated Reporting Packs (RRPs) which the GDN owners are required to complete. The information provided is analysed, where necessary additional clarification is requested, subsequently discussed at cost assessment visits to each of the owners and the outcome of the process is presented in an annual report. The annual report for 2008/09 was postponed and Ofgem plans to include findings from the 2008/09 and 2009/10 cost assessment work in the development of the next price control, (RIIO-GD1).

Shortly before the cost visits, Ofgem engaged Rune Associates as consultants to assist with the later stages of the analysis, support them at the visits and to prepare a short technical report summarising their findings and recommendations on specific topics. Rune Associates has previous experience of the GDPCR review and detailed understanding of network operational and technical matters.

This report summarises Rune Associate's findings, considers particular issues that were identified within the constraints of scope, resource and time that were associated with the assignment and sets out recommendations. Our detailed recommendations are included within Section 6 of the report. However, a number of significant points have been drawn out below:

- 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, we recommend Ofgem undertakes further work to clarify RRP requirements in these areas.
- We think that improvements could be made in the areas of major project work and other infrequent expenditure. We recommend that Ofgem gathers information for whole project life, including the material deliverables or outputs expected for the expenditure. This approach would ensure phasing of expenditure between financial years can be considered in a wider and potentially more relevant context. We also recommend Ofgem reviews the price control process to make allowance for known major expenditure events which may have a wide range of financial outcomes.
- We take the view that further work be undertaken by Ofgem to give guidance to the owners of multiple networks of the most effective way of presenting the information which is common at an owner level and that information which is network specific.
- All GDN owners have reported postponement or cancellation of LTS and Storage projects as a result of downward revisions of peak gas demand forecasts affecting every network. As this is a key driver for LTS and Storage capex, we recommend that Ofgem undertakes with the GDN owners, a review of the gas demand forecasting processes.
- We note that some GDN owners, notably SGN & NGG, take the view that these under-spends in LTS can be used to offset increases in Other Capex expenditure.

2. CONTEXT

2.1. BACKGROUND

The Gas Distribution Price Control Review (GDPCR) for the period 2008 to 2013 set the price control, which specifies the maximum revenue that the owners of the eight licensed gas distribution networks (GDNs) can recover from their customers.

2.2. ANNUAL REPORTING

As part of monitoring performance during the price control period, each owner is required to produce Regulated Reporting Packs (RRPs) with commentary for each network in their ownership. These packs are required to be prepared by 31 July each year for the preceding 1 April – 31 March.

Analysis of the RRPs is carried out by Ofgem and supplementary questions are produced, in order that the packs are fully understood and to review their consistency, Ofgem then visits each owner.

A full review of the 2007/08 RRP was carried out by Ofgem in the autumn of 2008 and an Annual Report published on their findings. This Annual Report set out revenue, expenditure and returns on regulatory equity for GDNs, updated benchmarking analysis of the GDNs' expenditure during the GDPCR period, summarised quality of service (QoS) information and gave Ofgem's provisional assessment of Regulatory Asset Value (RAV) for each licensee.

The review process from 2008/09 was deferred and is being carried out alongside the 2009/10 review. The annual report for 2008/09 was postponed and Ofgem plans to include findings from the 2008/09 and 2009/10 cost assessment work in the development of the next price control (RIIO-GD1).

Visits were held during October 2010, in addition to the normal review process these visits considered preparations and initial forecasts to inform RIIO-GD1.

Ofgem put in place a team of analysts to carry out much of the detailed review work on the RRPs. This work included assimilating the data to provide regression analyses for comparisons between the eight networks in areas where regression has been deemed appropriate.

Ofgem also engaged Rune Associates as consultants who have previous experience of the GDPCR review and detailed understanding of network operational and technical matters, to assist the analysis.

3. PURPOSE

The purpose of the assignment was to support Ofgem's cost reporting team for the cost visits, in particular the provision of technical analysis of gas distribution network activities for the period under consideration.

4. SCOPE

The scope of the assignment covered capital expenditure (capex), replacement expenditure (repex) and direct operational expenditure (direct opex) for reporting years 2008/09 and 2009/10 and was split into 2 stages as follows:

Stage 1

- Further analysis of the RRPs for 2008/09 and 2009/10 for the eight licensed GDNs, building on analysis already carried out by Ofgem.
- Preparation of further supplementary questions based on the analysis, the RRPs and supporting commentaries for 2008/09 and 2009/10 for the eight licensed GDNs focusing in particular on technical aspects of the work.
- Review of the benchmarking information for capex, repex and direct opex for 2008/09 and 2009/10 to identify any key issues and further questioning for the GDNs.

Stage 2

- Attending the visits, with representatives from Ofgem, to the companies and taking the lead on areas stated above.
- Carrying out any necessary follow-up actions as required following the visits for the areas stated above.
- Preparing a short technical report summarising the findings and recommendations on specific topics in each of the following work areas:
    - Capex – LTS & Storage, Mains reinforcement and governors, Connections, Other Operational
    - Repex – LTS, Mains and services
    - Opex (Direct) – Work Management, Emergency, Repair, Maintenance, Other direct opex

5. APPROACH

The approach employed on this assignment involved the use of 4 consultants to undertake the detailed review work for different work areas contained within the RRP. A single consultant then accompanied Ofgem on the actual visits and marshalled the results from the visits for the remaining three consultants. The final report was compiled from input from all of the consultants, who identified findings from the documents presented and material provided during and following the visits.

5.1. STAGE 1A – REVIEW DOCUMENTATION

Each consultant reviewed the information presented from the following sources:

- RRP Packs
- RRP Commentaries
- Answers to Questions from Ofgem
- GDPCR Final Proposals

In the amount of time available, this could not be a fully comprehensive review of every aspect, the consultants therefore carried out a fast track review to identify areas which would benefit from further exploration at the visits. Each consultant produced a short briefing note and questions to be taken forward to each visit.

5.2. STAGE 1B – VISITS

The visits were based upon an agenda agreed between the owners and Ofgem before the Rune Associates review was undertaken. This took the form of:

- Review of 2008/09 & 2009/10 capex, opex & repex expenditure
- Discussion of the initial forecast for the period 2010-2017 in the context of the next review
- Discussion of Forecasting tools and methodologies

Although the Rune consultant was present for the whole visit, the primary scope of interest was the items covered in the first of the above topics, the review of 2008/09 & 2009/10 expenditure.

5.3. STAGE 2A – VISIT REVIEW

A post visit review meeting was held at Ofgem's office to collect feedback from Ofgem attendees and our consultant. This meeting identified the following items on which the post visit review should be based:

- Emergency & Repair
- Maintenance
- LTS Capex and LTS Repex
- IS Expenditure
- Systems Control Expenditure (DNCS Project)

5.4. STAGE 2B – POST VISIT REVIEW & DOCUMENT FINDINGS

Each consultant reviewed the post visit information for all areas flagged in the Stage 1 analysis and considered in more detail the items flagged in Stage 2A.

6. FINDINGS

6.1. INFORMATION PROCESS AND QUALITY

In order to capture feedback for future processing we have included below a high level summary of our observations in carrying out this piece of work to assist Ofgem in the review process.

6.1.1. Relevance of Information Requested

We have found that the information gathered gives a good understanding of the issues surrounding assessment of the performance of the networks during the reporting year.

We believe improvements could be made in the areas of major project work and other infrequent expenditure. For this expenditure we recommend the information reporting process gathers information for whole project life (expenditure to date and forecast to completion). In addition to single year expenditure, information should be gathered for the whole control period including the material deliverables or outputs expected for the expenditure. This approach would ensure phasing of expenditure between financial years can be considered in a wider and potentially more relevant context.

We believe further work could be undertaken by Ofgem to give guidance to the owners of multiple networks of the most effective way of presenting the information which is common at an owner level and that information which is network specific. The current process leaves the owners to consider the best way of achieving this objective and leads to a considerable amount of information being repeated within the commentary submissions.

6.1.2. Quality of Information Returned

We recognise the considerable time and effort the network owners expend in gathering information within their organisations and presenting it in the most effective form. In reviewing the responses of the four owners we can form opinions on the relative success of the different owners in achieving a clear and concise submission.

We have provided the table below to give a subjective comparison between the owners on the effectiveness of the initial submissions and subsequent questioning and visit processes. This is intended to aid the learning process rather than imply criticisms of individual owners.

Owner	Quality/Clarity of Submission	Quality/Clarity of Answers to Supplementary Questions	Relevance of Presentation Material at Visits	Ability of attendees to cover questions raised
SGN	★★★☆☆	★★☆☆☆	★★☆☆☆	★★★★☆
NGN	★★★★☆	★★★☆☆	★★★☆☆	★★★★☆
WWU	★★★★☆	★★★★☆	★★★★☆	★★★★☆
NGG	★★★☆☆	★★★☆☆	★★★☆☆	★★★☆☆

Table 1

6.2. ISSUES IDENTIFIED

The following table provides a summary level view of all the issues that we have explored in carrying out the review. Where we have made significant comment on a topic we have provided that discussion within sections 6.3, 6.4, & 6.5. The references to these discussions are given in the last column. At the end of each discussion section, our conclusion or recommendation has been highlighted in red text.

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Work Management (Opex)	Regression Changes	There has been a general widening of the plots and the measure of the goodness of fit has decreased. Further discussion provided see Ref				6.3.1.1
Work Management (Opex)	Regression movements Year on Year		NGN have moved from 1st to 4th in the regression, but are still well below the regression line, and have improved in absolute performance between 2008/09 and 2009/10.		Erratic movements in three of the four NGG network in work management regression Not Progressed at this stage	
Work Management (Opex)	Increases in Systems Operator costs		Increased costs for System Control during 2009/10, running legacy software on the new IT infrastructure, resulted from in-house staff costs increasing by £1.3m, while reduced SOMSA costs from NGG fell by only £0.9m.			

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Work Management (Opex)	Potential evidence of inconsistent cost capture	In both years, Sc and So cost for Customer Management is proportionally higher than that for Operational Management than all other networks. Further discussion provided see Ref		As displayed by the regression chart, WW are ranked 8th in 2008/09 in Work Management. Further discussion provided see Ref		6.3.1.2
Emergency/ Repair (Opex)	Question regarding the allocation of costs between Emergency and Repair			Network appears most efficient in Repair but not so in Emergency Further discussion provided see Ref		6.3.2.2
Work Management/ Emergency/ Repair (Opex)	Handling of Incident Costs	The cost of incident handling is not being consistently reported by all owners Further discussion provided see Ref				6.3.2.10
Emergency (Opex)	Process for dealing with external escapes				(All) process has been changed with increased costs resulting. Details of changes requested Further discussion provided see Ref	6.3.2.8

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Emergency (Opex)	Volume of No Trace Emergency outcomes		Ratio of No Trace/report significantly higher than other Networks Further discussion provided see Ref	Ratio of No Trace/report significantly lower than other Networks Further discussion provided see Ref		6.3.2.3
Emergency (Opex)	Performance on Emergency			Performance has deteriorated in 2009/10 Further discussion provided see Ref		6.3.2.2
Emergency (Opex)	Impacts on Emergency costs				(NW) Noted that the costs are impacted by the effects of winter conditions, Rossendale emergency and actioned reports workload. We recommend a clarification of costs related to these effects.	
Repair (Opex)	Repair /report ratio	(Both) Ratio is high for both 2008/09 & 2009/10 and both networks Further discussion provided see Ref		Ratio is considerably lower than other networks Further discussion provided see Ref	(Lon) Ratio is higher than most other networks. Further discussion provided see Ref	0

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Cost performance against allowance	For 2009/10, Sc overspent its allowance by 9% (£0.9m), and So overspent its allowance by 3% (£0.5m). Further discussion provided see Ref	For both 2008/09, and 2009/10, they have been operating within the Maintenance Allowance. Further discussion provided see Ref	WWU is operating within its maintenance allowance Further discussion provided see Ref	All NGG networks operated within the Maintenance Allowance in 2009/10, although only WM produced a year on year reduction from 2008/09. Further discussion provided see Ref	6.3.3.5
Maintenance (Opex)	OLI Cost reporting			The RRP Commentary states that OLI inspections are referred to under the Routine Maintenance heading. Due to the `lumpy` nature of OLI expenditure, these costs are treated by other Networks as non-routine Maintenance.		

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Revised/increased use of RCM for work schedules	Additional RCM templates applied (< 7barg governors)	There are plans to widen the asset range for which RCM is applied, with the expectation that a reduction in maintenance workload will result. Further discussion provided see Ref		There are plans to widen the asset range for which RCM is applied, with the expectation that a reduction in maintenance workload will result. Further discussion provided see Ref	6.3.3.3
Maintenance (Opex)	Carrying out risk analysis over 4 networks				NGG carries out analyses of risk and sets priorities over all 4 Networks, not on individual Networks, that may result in some apparent imbalance of workload between Networks in some years. We understand this effect however it should be expected that following the move to this approach the costs should stabilise with a sustained relative performance ranking between the NGG networks.	

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Changes to Operating Polices (Other than RCM)	Reduced routines (< 7barg governors) through greater profiling, flood risk assessment 28 redundant holders isolated and purged Move to reduced maintenance programme (holders, valves and regulators) Not progressed at this stage	There appears some conflict within the RRP commentary and the visit presentations on changes to Operating Polices RRP - There have been no significant changes to operating policies or procedures in 2009/10 requiring disclosure. Visit presentation – Maintenance costs have reduced over the period due to :- • Review of policies and procedures to incorporate best practice and remove unnecessary maintenance activities. It is understood that the information supplied on the visit is correct.			

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Impact of "flex" gas being available from the NTS		Have a policy of removing the need for all holders. Further discussion provided see Ref		Have a proactive policy to significant reduce the number of holders Further discussion provided see Ref	6.3.3.2
Maintenance (Opex) / Other Capex	Relationship between Investment and reduced operating costs	SGN utilising ground source heat technology in relation to water bath heaters (IFI initiative).	The repex expenditure on new waterbath heaters, was cited as an example of opex workload savings accruing from repex/capex expenditure, as a result of new asset designs being less susceptible to failure, and requiring less maintenance.	The reduction of maintenance workload through the replacement of equipment at the optimum time in an assets life has been reported. Future forecasting of outputs should contain a relationship reflecting the impact on maintenance of some elements of capex and repex expenditure.		

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Impact of extreme weather on Maintenance costs		Significant winter weather impacts are indicated by increased costs for Emergency and Repairs, none are shown for Maintenance. Were there no impacts, or were there movements from planned to non-routine, fault related work? If the latter, will that result in additional costs in subsequent periods to clear backlogs? It was confirmed during the visit, that the maintenance workload and resultant costs suffered no measurable winter weather impacts.	Emergency and Repairs work categories show significant additional costs due to the severe winter weather. No weather impact on Maintenance is indicated Confirmed during site visits, that no impacts on Maintenance costs occurred.	There is an indication in all 4 Networks, to varying degrees, that there may be some costs moved from Repairs into Maintenance. This flags the moving nature of the definition of cost capture between these two areas. NGG are alone among Network Owners reporting increased costs for maintenance due to 2009-10 winter could this be a further indication of inconsistent cost capture between networks? At the visit NGG clarified that the bad weather had no adverse impact on maintenance costs	

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Identified efficiency initiatives	During the visits, a number of initiatives were referred to relating to efficiency improvements within Maintenance: Job Plan Prioritisation - All work prioritised (E1 – Critical, E2 – Important, E3 – Standard, E4 – Other) Deliver 100% of planned work programme through greater forward planning Job Plan Alignment - Align work plan geographically to reduce travel, duplicate visits Align work plan by resource (improved cross flex, mixed teams) Utilise FCO labour (seasonal availability) for simple tasks, supporting teams	Reference has been made to extending single person working, where this is permissible. Improved scheduling to reduce non-productive time.	A Performance Management Framework (PMF) was introduced in 2007 to enhance the productivity of Supervisory and Managerial Staff. The RRP Commentary details a number of initiatives which it is said, have enhanced efficiency. No specific quantification for efficiency improvements has been provided. During the visits, it was confirmed that unlike other Networks, no `single person` operations were undertaken within maintenance. All maintenance work remains `Team` based.	NGG RRP commentary, and figures in the ROP refer to Management Initiatives, some relating to `Underlying Cost Efficiencies`. There are wide variances in their impacts between £nil and £0.8m, for the four Networks, which are unexplained. Statements in the RRP Commentary referring to a "step change in performance" during 2009/10. However there are no indications of the impact on costs, which appear not to have reduced significantly, given the reduction in Workload.	

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Maintenance (Opex)	Asset Records	In the visit noted a need for a wide scale exercise to verify asset records. This will feed into a wider application of available RCM templates Further discussion provided see Ref	Asset Data being captured Further discussion provided see Ref	Asset Data being captured Further discussion provided see Ref	No mention of work being carried out to improve the asset records Further discussion provided see Ref	6.3.3.4
LTS and Storage (Capex)	LTS expenditure period 2008/09-2012/13 Comparison to allowance	All networks - additional information is required to provide a complete tracking for LTS Capex expenditure for the control period Further discussion provided see Ref				6.4.1
LTS and Storage (Capex)	Re-opener for LTS Capex	Believed additional capex granted in re-opener SGN report this amounts to a further £20.03m (2008/09 prices) for the control period				
LTS and Storage (Capex)	Actual spend in 2008/09 and 2009/10 is significantly below allowance	By £22.4m (21%) Sc by £8.7m (30%) So by £13.8m (18%) Further discussion provided see Ref	By £7.7m (54%) Further discussion provided see Ref	By £38.7m (51%) Further discussion provided see Ref	By £32.1m (26%) EoE by £8.7m (54%) Lon by £10.1m (11%) NW by £10.5m (70%) WM by £2.8m (60%) Further discussion provided see Ref	6.4.1

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
LTS and Storage (Capex)	Forecast peak gas demands for the control period are significantly lower than assumed at the time allowances were set	All networks report significant differences between forecast peak day demands and those calculated from actual demands corrected for weather conditions Further discussion provided see Ref				6.4.1.1
Reinforcement (Capex)	Work In Progress (WIP) can separate work volumes from recorded expenditure			Identified an issue for year 2008/09 Further discussion provided see Ref	(NW) A major project has been flagged which causes an issue for 2009/10 Further discussion provided see Ref	6.4.2.1
Reinforcement (Capex)	Above 180mm units cost concerns	(Sc) comparable workloads for both years but 35% increase in unit costs in 2009/10 SGN has explained that the increase is due to work moving from 180mm pipes to larger pipe sizes of 630mm across the two years. Information is not sufficiently robust on the true cost of different pipe sizes to comment further but workload at the higher pipe sizes has certainly increased.				

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Reinforcement (Capex)	Reinforcement Unit Costs		Above and below 180mm are the same Use of Direct Labour likely to increase unit costs Further discussion provided see Ref		(EoE) significant movement of unit costs and pipe diameter between years requires explanation (WM) explanation required of lower performance Further discussion provided see Ref	6.4.2
Reinforcement (Capex)	Variance between figures in RRP and Figures in commentary	(So) Variance needs explanation SGN reported mains reinforcement project deferrals within the PCR period with expectations however for delivery within the allowances.				
Governors (Capex)	Variance between figures in RRP and Figures in commentary	(So) Variance needs explanation Variances being taken forward with Ofgem				

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Governors (Capex)	Unit costs			2009/10 unit costs for both the renewal & growth categories of governors are higher than 2008/09 Further discussion provided see Ref		6.4.3.1
Connections (Capex)	Connections Regression Ranking	(Sc) improvement of performance ranking in 2009/10 requires explanation No explanation received			(EoE) Unit cost performance appears to be at variance with regression position Issue not progressed at this stage	
Connections (Capex)	Connections Contribution Levels	(Both) contribution level lower compared to other networks (Both) contribution levels identical. May be coincidence but could also indicate inaccurate data collection. No explanation received	Contribution Levels have fallen Issue not progressed at this stage	Contribution levels significantly above other owners Issue not progressed at this stage	(NW & WM) Low contribution levels compared with other Networks in 2008/09 Issue not progressed at this stage	
Other (Capex)	Other Capex expenditure period 2008/09-2012/13 Comparison to allowance	All networks - additional information is required to provide a complete tracking for LTS Capex expenditure for the control period Further discussion provided see Ref				6.4.4.1

Category	Issue Identified	SGN	NGN	WWU	NGG	Reference
Other (Capex)	IS Expenditure levels				Significant increase in IS expenditure compared to the allowances due to the re-scoped Front Office systems (GDFO) Further discussion provided see Ref	6.4.4.2
Other (Capex)	GTMS Replacement	A pre-requisite to the exit from SOMSA is the replacement of the GTMS system. This system was due to be replaced in 2008 however a delay to the contract means that it will not be replaced until Summer 2011 at the earliest. This delay has added cost to the project and interim solutions have had to be implemented to move System Operations activities to the new control rooms. Further discussion provided see Ref				6.4.4.3
LTS (Repex)	Need for and phasing of major LTS replacement projects	Timing of Isle of Wight LTS replacement in Southern network. Further discussion provided see Ref	Remediation of Catton Wetheral instead of replacement Further discussion provided see Ref	Detailed requirements and phasing of major works associated with LTS pipelines Further discussion provided see Ref		6.5.1
Mains & services (Repex)	Units costs for mains	Unit costs show some level of unexpected movements between pipe sizes suggesting that the unit costs do not represent a true reflection of the actual costs involved in undertaking work at different pipe sizes Further discussion provided see Ref	Unit costs show some level of unexpected movements between pipe sizes suggesting that the unit costs do not represent a true reflection of the actual costs involved in undertaking work at different pipe sizes Further discussion provided see Ref	Unit costs have been reported at two levels above and below 180mm suggesting that the unit costs do not represent a true reflection of the actual costs involved in undertaking work at different pipe sizes Further discussion provided see Ref	Unit costs show some level of unexpected movements between pipe sizes suggesting that the unit costs do not represent a true reflection of the actual costs involved in undertaking work at different pipe sizes Further discussion provided see Ref	6.5.2.1

Table 2

6.3. DISCUSSION OF OPEX ISSUES

6.3.1. Work Management

6.3.1.1. General

At the time of the 5 year review, the Network's performances were modelled by means of regression analysis. The 3 years performance of each Network to 2009/10, are shown in Figure 1.

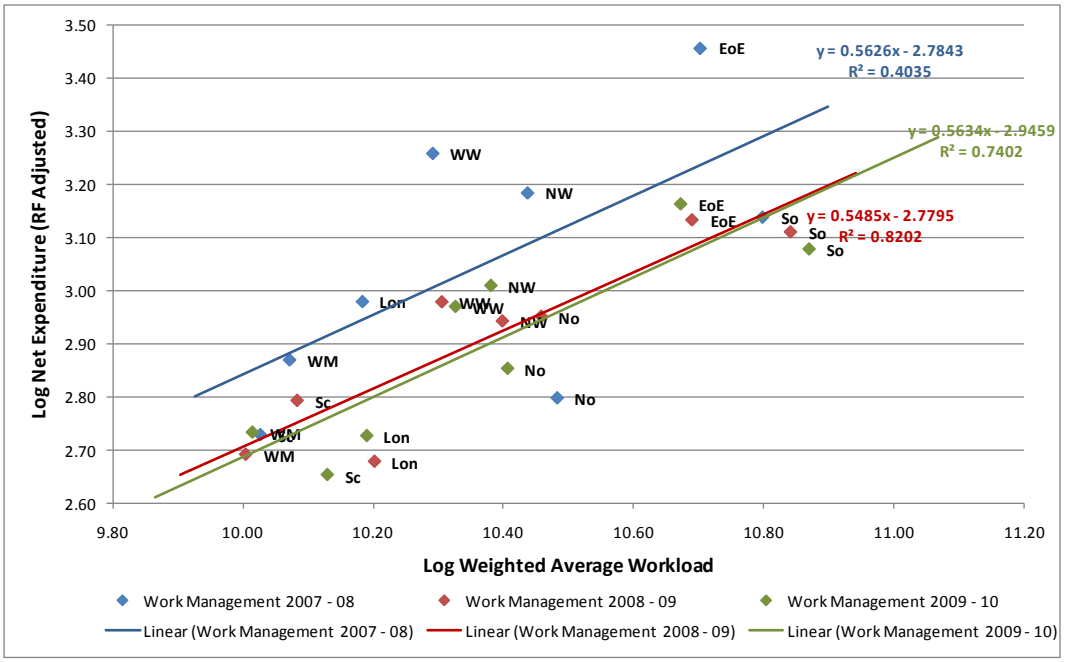


Figure 1

The Work Management regression line has shown has shown little movement between 2008/09 and 2009/10, although with 3 GDNs above the line falling in performance, and three below the line improving their performance, the r^2 value has fallen from 0.82 to 0.74 as the spread of plots has widened.

6.3.1.2. Inconsistent Cost Capture

SGN

In both years, Sc and So cost for Customer Management is proportionally higher than that for Operational Management, see Figures 2 and 3. All other GDNs report proportionally higher costs for Operational Management. Does this infer that there is misidentification of some of the costs within Scotia, or are there justifiable reasons for this inconsistency with the other GDNs? From the most recent analysis of Customer satisfaction, overall Scotland and Southern are rated 2nd and 3rd respectively. However, the scores are not materially different from other GDNs, as might be expected from the indication of expenditure. This topic was raised at the visits without conclusion, further work on the definitions is recommended.

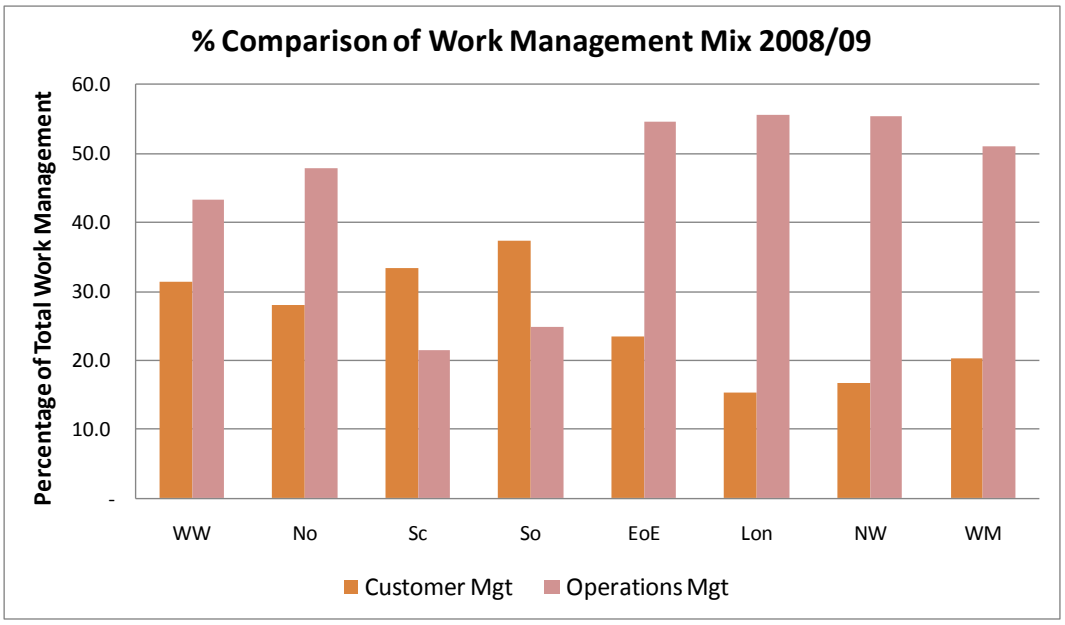


Figure 2

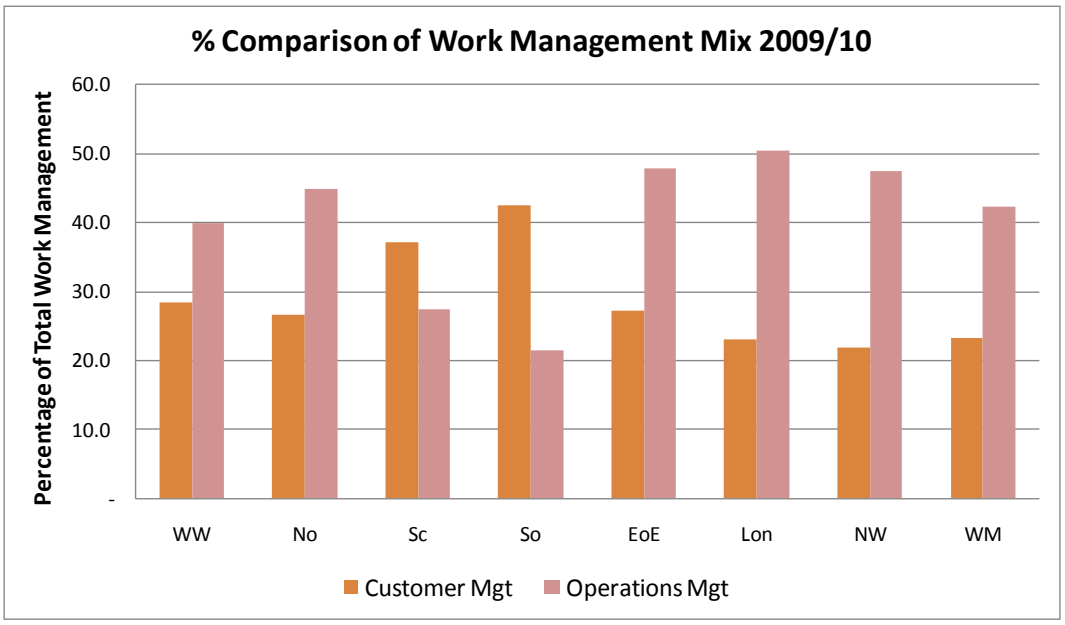


Figure 3

WWU

As displayed by the regression chart, WW are ranked 8th and last for 2007/08 and 2008/09, and 7th for 2009/10. Little improvement is evident in 2009/10, the improved ranking being attributable more to the worsening performance of others. The relatively high costs for work management are not reflected in the cost performance of activities such as Repair. This potentially could be due to the allocation of costs between process activities and work management functions. We have not identified any explanation for this difference in cost performance.

We believe the issue identified above for both owners are potential evidence of inconsistent capture of costs. We believe it may be more beneficial to investigate how work management costs can be allocated to processes such and Emergency, Repair and Maintenance rather than attempting to fully

identify current inconsistencies. We recommend discussions are held with the owners to see where more work management costs can be attributed to the activities concerned

6.3.2. Emergency & Repair

Whilst Emergency and Repair are classified within the RRP as two different work activities there is a close linkage as almost all repairs will be initiated via an original emergency job.

6.3.2.1. Re-checks

Emergencies are almost entirely carried out by First Call Operatives (FCO). These resources are not fully utilised by the emergency activities and will be employed on non emergency work (especially meter-work where this is available), whilst on these other tasks their costs should be allocated to the particular activities being carried out. However, FCOs can also provide assistance to the Repair activities by undertaking follow-up checks on escapes from the network until the escape has been fully resolved. In these circumstances there is a need to ensure common practices across all owners as to where time for these activities is recorded.

Owner	Costs for FCO Carrying out Re-check coded to
SGN	Emergency
NGN	Repair
WWU	Emergency
NGG	Emergency

Table 3

'Rechecks' costs - There is a need for consistent treatment of these costs across GDNs. Rechecks are carried to monitor external escape locations until the work has been completed. It would seem logical that the costs are attributed to repairs therefore, although the WWU practice could be argued and the costs attributed to emergency reports. At least one other GDN (NGN) attributes rechecks costs to repairs. Either way the real issue is consistent practice by all GDNs.

We recommend there is a review of activity definitions to ensure consistent attribution of costs associated with rechecks. The current Ofgem RIGs definitions state:

- Emergency – 'includes the cost of rechecks'
- Repairs – 'includes reprogrammed repairs and rechecks'

These definitions seem to be the basis for different interpretations by GDNs resulting in inconsistent cost attribution practices.

6.3.2.2. Emergency/Repair Statistics - General

It is a duty placed on all gas transporters to attend any report of an escape from the gas network. Depending on the work required during the visit, a

number of statistics are captured. Three issues have been identified for discussion here;

- on some occasions no escape of gas can be identified from the emergency report
- multiple physical repairs may be required associated with a single report and
- the need to ensure the number of emergency reports is consistently counted.

6.3.2.3. Emergency Statistics – No Trace

In the case where no escape can be found the work is terminated with a "No Trace" report. Differences in the number of "No Trace" situations can be monitored by the ratio of No Trace per report. Large differences could indicate different working policies and procedures, and have been explored.

The table below shows the ratios for all network owners. Table 4 identifies two outliers WWU (Low) and NGN (High) compared with other owners.

	No trace - % PREs	
	2008/09	2009/10
SGN	14.4%	14.1%
NGN	28.3%	29.6%
WWU	4.9%	4.9%
NGG	19.1%	17.7%

Table 4

This is likely to suggest operational policies and/or data collection inconsistencies for WWU and NGN. Also, the low level of 'no trace' reports for WWU might indicate unnecessary work and cost. Regression rankings for 2008/09 & 2009/10 emergency are 6 & 7 respectively. Equally the high volume of No Trace for NGN suggests a high level of abortive calls.

This matter was raised at the WWU meeting and has been investigated following further answers given from all owners but the issue has not been clarified. We recommend that the issue is followed further to determine the mechanisms which are giving rise to this effect.

6.3.2.4. Repair Statistics – Repair Count

Furthermore the ratio of repairs per report can indicate differences in the counting mechanisms between owners either by policy or via the work management IT reporting mechanisms.

Owner	Repair Count
SGN	Every repair is counted separately
NGN	Unable to confirm[1]
WWU	Every repair is counted separately
NGG	Every repair is counted separately

Table 5

6.3.2.5. Repair Statistics – Report Count

Finally it is important to ensure all situations that require a repair team to attend a reported escape from the network are consistently counted by all networks. If these statistics are not captured consistently the comparisons between networks could be erroneous.

In order to explore statistics capture more closely, all networks were asked to provide more details on the processes surround the emergency and repair activities.

Owner	Report Count
SGN	Counted as the number of unique emergency jobs which require one or more repairs to prevent escape. FCO can raise additional emergency job count for other escapes discovered in the vicinity (hence additional report)
NGN	Unable to confirm[1]
WWU	Not linked to the Emergency but to a master job record therefore one emergency call could generate more than one reports
NGG	All emergencies classified as "Upstream" or "Downstream". Assume number of reports is the number of Upstream emergencies

Table 6

6.3.2.6. Emergency Workloads

The number of emergency reports, both internal & external, is increasing. This might be a consequence of increased/sustained high network operating pressures or environmental conditions, e.g. protracted and extreme winter weather. The information provided regarding the numbers of external reports and repairs over the past 3 years indicates high levels of activity over the winter period 2009/10.

[1] NGN have provided details of their definitions although we have not been able to fully resolve the impact on repair counts in the time available.

6.3.2.7. Ratio Repairs/Reports

Table 7 below records the ratio of the number of repairs per escape report as reported in the RRP submission.

	Mains repairs/report	
	2008/09	2009/10
SGN	1.67	1.83
NGN	1.15	1.14
WWU	1.01	1.05
NGG	1.26	1.22

Table 7

This table shows significant difference in the number of repairs carried out per reported escape between the network owners. We have asked all of the owners to provide further details of the capture of statistics in their respective organisations. The results of these questions have been set out above. We have not identified any source of reporting differences which would explain the differences. The outliers of SGN (High) and WWU (Low) are still surprising to us as we do not consider that network conditions would lead to such variations.

We recommend that if the number of repairs is used for comparison of efficiency in regression analysis and that further work is carried out to explain the wider variation in these ratios.

6.3.2.8. Emergency Process Issues

It is noted that the Osgem process for dealing with external escapes has been implemented following HSE intervention.

NGG in their commentary:

"Osgem process – external leaks: As highlighted in last year's commentary, National Grid was served with an Improvement Notice by the HSE in March 2006 in relation to an incident in Shilbottle, Northumberland. Improved processes were introduced, including more proscribed documentation which takes longer to complete. The estimated additional time taken is 10 minutes for a standard 60 minute job. During 2008/9 all reported escapes were dealt with in compliance with the Osgem process. Impact £0.3m increase"

We have not been able to fully review the impacts of these revised processes and we would recommend that Ofgem considers clarifying the process changes and quantify the consequential cost which build up to an increase in the order of £0.3m per network in the total cost of emergency activities for 2008/09, as stated in the commentaries.

6.3.2.9. Emergency/Repair Regressions

NGN has made a case for the analysis of the efficiency of emergency and repair activities to be considered as a combined activity, on the basis that questions of the capture of costs between the two activity areas would be eliminated.

We consider there is merit in giving this suggestion some consideration. At the present time, outside escape rechecks costs are reported in emergency if carried out by FCOs and in repair if carried out by teams (RIGS requirements

see notes on Rechecks above). We consider this to be an anomaly of reporting from historical cost capture methodology. We are firmly of the opinion that rechecks should always be captured associated with the repair activity as these costs should be considered an integral part of the repair activity. This is particularly so where networks are carrying out a higher percentage of repairs on the first visit thus minimizing the number of recheck activities required. In order to fully understand the cost impact of such a policy (which is currently being implemented in SGN networks) it is essential that the total repair costs including recheck are considered in the analysis.

A counter argument could be made if the driver for regression were moved from units of activity to drivers which reflect the full nature of the activity and controls which can operate on both volumes and costs. In this alternative, the two activities of emergency and repair have different characteristics. The causes of the majority of escapes of gas internal to a property are outside the control of the network operator, the volume of such cases may well be a simple relationship to the number of properties within the network's area of responsibility. This should be compared to the causes for escapes on the gas network which can be influenced in a number of ways; Network Pressures, Leakage Surveys, percentage of metallic pipe in network.

We recommend that any move in the efficiency analysis of these activities considers all aspects which impact on the ability to capture accurate comparisons. In this respect we also recommend consideration is given to incorporating the full process costs associated with the activities into the analysis, including those elements associated with work management. At the present time considerable amount of the process cost is currently captured in the work management area of the RRP (e.g. dispatch, scheduling and call centre activities).

6.3.2.10. Incident Costs

It is clear from the submissions and visits that owners are not consistently reporting these costs to the same activity area.

Whilst consistent reporting is essential, the costs associated with emergencies affecting multiple customers can be substantial and adversely affect benchmarking of cost effectiveness. In addition cost recovery & compensation payments also influence performance, as these costs can very often be split between financial years such that the costs are incurred in the first year and recovery appears as a credit in the following year.

To address this issue we recommend that these costs are separately reported under emergency activity and are excluded from the regression analysis. The definition of such an emergency could be established based on a threshold number of customers affected and various causes (e.g. water ingress, gas supply emergency).

6.3.3. Maintenance

6.3.3.1. Definition of Routine/Non Routine Maintenance

In carrying out the analysis we experienced difficulties in fully understanding how all owners had interpreted the definition of routine and non routine maintenance. The intention of this definition is to understand how expenditure which is outside the normal annual cycle can be assessed to minimise year on year distortions of the comparisons between networks. Historically, large expenditure items such as holder painting or OLI inspections which occur on cycles of between 5-10 years are easily categorised as non-routine items.

However, with the increasing use of RCM scheduling of maintenance activities to a wider pool of assets, it is likely that expenditure once considered "routine" may be carried out at intervals of up to 6 or 7 years.

We therefore recommend that in undertaking further work in the assessment of maintenance regressions the categorisation of expenditure is revisited. This analysis should also consider if multiple years maintenance expenditure should be considered given the move towards longer and unusual maintenance schedules.

6.3.3.2. Increased Use of flex for Diurnal Storage

NGG

During visits it was reported, that some non-routine Holder painting projects were deferred (anticipating demolitions), and that the money approved for Holder painting within the non-routine Maintenance Allowance, had been moved to fund the painting of AGIs. No information has been seen which clarifies whether the costs were compatible, or an efficient re-direction of the allowance.

NGN

Further information obtained during the visit explained that the reduction in Holder painting is in anticipation of extensive Holder demolition to follow an expected satisfactory use of diurnal `flex` in supplies during 2010/11 winter. The inference of this is that if the trial is successful, then the Holder painting workload will diminish and cease. Failure of the trial would result in continuation of the Holder painting workload, perhaps in a reduced form.

Of the £1.1m YOY savings reported in chart 2.5a, £0.4 is attributed to "Reduced non routine planned workload - holder painting, OLI runs". Is this reduction merely a deferral, or does it indicate a reduction in ongoing requirements?

6.3.3.3. Increased RCM

NGG

RRP commentary explains that further RCM analysis has allowed <7barg Regulator site functional checks to be reduced in frequency to a maximum of 4 years. This will have a significant cost impact through routine workload reduction. Ofgem asked for more details on this topic.

We have not seen a detailed reply to the question tabled however during the visits NGG explained how RCM techniques are being used to cover an increasingly wide range of equipment. Such reductions in workload are considered appropriate for efficient operation although we cannot comment on the quality of the additional templates which have been developed.

By reviewing the Maint2 Procedure as it applies to PRIs it has been found possible to extend the periodicity of Functional checks to as long as 48 months. Whilst some interim visits have been introduced, this has reduced the Maintenance workload

Reviewing the application of Maint11 Procedure, applied to Electrical equipment, has reduced annual maintenance.

WWU

The review of the application of maintenance procedures, and the feedback of data resulting from maintenance activities undertaken within the RCM

process, has resulted in reductions in workload, removing unnecessary tasks. No quantification of these reductions has been seen.

Revisiting the RCM recommended maintenance frequencies, has resulted in extending maintenance intervals from the previous cap of 2 years to as much as 6 years.

The 6 year interval referred to above is coincident with the painting inspection visit thus harmonizing activities and reducing travel and visit overheads

RCM recommended maintenance times are being refreshed with latest fault data, this may not have a impact on planned maintenance workload, but should have a positive effect in reducing unplanned visits reacting to faults, which should reduce as maintenance periods are refined.

Consideration is being given to extending the range of assets maintained under the RCM regime, to include calibration equipment.

2 yearly Maintenance checks for safety equipment on 2-7 bar equipment are currently constrained not by RCM recommendations, but by the Pressure Systems Safety Regulations. This period could only be extended, and therefore the workload reduced in future, by approval of the Competent Authority.

SGN

Additional RCM templates applied (< 7barg governors).

We recommend that Networks should be requested to quantify the workload impacts of revised Maintenance schedules. At present, the evidence for `efficiency improvements`, is masked by significant but un-quantified workload reductions due to the extension of maintenance periods.

6.3.3.4. Asset Data Capture Exercise

With the exception of NGG all other owners made reference to work being carried out to improve the asset records. Such work was being used to feed either into investment plans or maintenance templates for extending RCM techniques. NGN provided interesting information of how they as a matter of course, capture photographs and general asset condition as part of the normal maintenance process, at relatively low cost. Asset data capture can be expensive to capture and if not maintained can quickly deteriorate leading to the information needing to be gathered again. This process is therefore difficult to assess in terms of efficiency in the context of single financial years. We recommend some thought is given to requiring the owners to consider a common measure of asset information which can record the output from the investment in data gathering and ensure the information does not degrade over time.

6.3.3.5. Cost Performance Against Allowance

SGN

For 2009/10, Sc overspent its allowance by 9% (£0.9m), and So overspent its allowance by 3% (£0.5m). Despite efforts to reduce the workload, and increase efficiency, the outcome gives a 2009/2010 year on year cost increase for Scotland, which remains high at 99%[2] of its 2006/07 cost, and a Southern cost, which although showing a decrease of 3% between 2008/09 to 2009/10

[2] Subsequent to the submission of the RRP figures reclassification of cost allocation has reduced maintenance costs reducing this increase to 22% as per SGN

is 9% higher than the 2006/07 cost. However, these costs may be impacted by large incident costs which SGN have captured under maintenance (See 6.3.2.10).

NGN

For both 2008/09, and 2009/10, they have been operating within the Maintenance Allowance. In the Maintenance cost regression, NGN shows a steady reduction in costs, notwithstanding a slightly increased workload in 2009/10. They were ranked 3rd in 2007/08, and have been ranked 1st for 2008/09 and 2009/10. In 2009/10, their expenditure was £8m against an allowance of £12.2m. They have reported £1.1m savings between the 2009/10 and 2008/09 financial years. Have been 1st in the regression ranking for both 2008/09, and 2009/10, with a year on year reduction of 10%, and for 2009/10 are at 52% of their 2006/07 maintenance spend. NGN provided detailed evidence at the presentation of the steps such as the move from 2 person maintenance teams to single person working of the actions they have been taking to reduce maintenance costs during the period.

WWU

WWU is operating within its maintenance allowance. Costs between 2008/09 and 2009/10 show an increase of £0.4m, with Routine Maintenance remaining static at £7.1m. The RRP commentary gives a comprehensive list of cost changes between the years. £0.5m of the cost incurred in 2009/10 was due to outstanding utility bills on leased and operational sites. These costs were incurred over the period from 2005 to 2009/10, and the Utility database has been updated to ensure this does not recur.

NGG

All NGG networks operated within the Maintenance Allowance in 2009/10, although only WM produced a year on year reduction from 2008/09. The claimed efficiency gains and measures resulting in reduced workload, are not clearly reflected in reductions of actual costs for Maintenance.

6.3.3.6. Revised Regression Drivers

At the time of the 5 year review, a common approach to analysing the three groups of activities, to produce a forecast, did not prove practicable. Even within `Maintenance Other`, differing analytical techniques were employed to produce the forecasts for the elements within.

To compare the GDNs performance a Composite Scale Variable was produced using the number of PRS/Offtakes/Holders/ Governors. Log regressions using this CSV on the last 3 years performances yields r^2 values ranging .25 - .55, with .25 resulting from the 2009/10 result.

Mains & service related costs are the largest element of Maintenance Other costs (c 50%), We recommend consideration is given to including mains length/service numbers within the CSV to see if this may yield some improvement in the goodness of fit of the regression.

6.4. DISCUSSION OF CAPEX ISSUES

6.4.1. LTS and Storage Capex

LTS and Storage capex expenditure generally involves large projects that often extend over several years and should be considered over the life of the project or the control period, rather than viewed and compared in isolation over particular financial years.

Initial review of expenditure during 2008/09 and 2009/10 indicated that all GDN owners had significantly under spent compared with allowances, in all GDNs. To assess whether this was caused by re-phasing of projects over the 5 year control period, further analysis was carried out to compare the allowance for the period with actual spend for the first 2 years of the period plus the RRP forecast figures for the remaining 3 years.

The Table 8 sets out the results of these comparisons:

		2008/09 + 2009/10				5 year control period			
		Spend	Price Allowance	Variance		Spend	Price Allowance	Variance	
		£m	£m	£m	%	£m	£m	£m	%
NGG	EoE	7.5	16.1	-8.7	-54%	27.9	45.6	-17.7	-39%
	Lon	78.8	88.9	-10.1	-11%	98.9	131.9	-32.9	-25%
	NW	4.4	14.9	-10.5	-70%	16.5	32.1	-15.6	-49%
	WM	1.9	4.7	-2.8	-60%	7.4	11.0	-3.6	-33%
	Total	**92.6**	**124.7**	**-32.1**	**-26%**	**150.7**	**220.6**	**-69.9**	**-32%**
NGN	No	**6.7**	**14.5**	**-7.7**	**-54%**	**34.1**	**51.3**	**-17.2**	**-34%**
SGN	Sc	20.4	29.0	-8.7	-30%	64.7	83.8[3]	-19.1	-23%
	So	64.2	78.0	-13.8	-18%	114.2	173.4	-59.2	-34%
	Total	**84.6**	**107.0**	**-22.4**	**-21%**	**178.9**	**257.2**	**-78.3**	**-30%**
WWU	WW	**37.9**	**76.6**	**-38.7**	**-51%**	**80.1**	**116.1**	**-36.0**	**-31%**

Table 8

It became clear that, as indicated in some of the GDN owner commentaries, it was not simply a matter of re-phasing within the control period but that a significant number of projects and expenditure have been either deferred beyond the current control period or cancelled.

To address this issue, all GDN owners were asked to confirm whether the planned delivery of outputs for the expenditure over the GDPCR period remained unchanged and if not to indicate the material items which have changed, in particular:

- those excluded items and associated costs
- additional items and associated costs

The purpose of the request was indicated as enabling a commentary to be provided on the costs to date + forecasts to 2012/13 and on the variance to an adjusted allowance.

NGG and SGN provided a full response to this request, which identified at project or minor expenditure category level for each year of the control period, the allowance and actual/forecast expenditure, identifying projects and expenditure which had been cancelled or deferred to the next control period.

NGN referred to changes associated with specific projects in 2008/09 and 2009/10.

[3] This value includes SGN estimate of capex reopener

WWU indicated in their commentary and subsequently in their presentation slides, the postponement of the Bancyfelin to Lampeter pipeline beyond the current control period.

The information provided above was used to compile a 'revised' allowance for the control period against which actual/forecast expenditure could be compared, as shown in Table 9:

		5 year control period				
		Spend	Price Allowance	'Revised' Allowance	Variance on 'Revised' Allowance	
		£m	£m	£m	£m	%
NGG	EoE	27.9	45.6	26.2	1.7	6%
	Lon	98.9	131.9	100.5	-1.5	-2%
	NW	16.5	32.1	19.5	-3.0	-16%
	WM	7.4	11.0	9.2	-1.8	-19%
	Total	**150.7**	**220.6**	**155.4**	**-4.7**	**-3%**
NGN	No	**34.1**	**51.3**	**42.3**	**-8.2**	**-19%**
SGN	Sc	64.7	83.8	70.0	-5.3	-8%
	So	84.3	173.4	90.0	-5.7	-6%
	Total	**149.0**	**257.2**	**160.0**	**-11.0**	**-7%**
WWU	WW	**80.1**	**116.1**	**85.3**	**-5.2**	**-6%**

Table 9

This reveals a much closer match between actual/forecast expenditure and the 'revised' allowance for the control period for NGG, SGN and WWU. The following section provides commentary for each GDN on the projects and expenditure removed.

NGG

The allowances for the following projects and expenditure identified in the detailed return have been removed less any actual or forecast expenditure:

GDN	Project/Expenditure category	Cost Removed (£m)
EoE	Sutton on the Hill to Ashley Hay	[redacted]
	Stansted Airport Upgrade (Allowance – actual/forecast)	[redacted]
	Teversham to Madingly Road	[redacted]
	Storage (Allowance - actual/forecast	[redacted]
	Total	[redacted]
Lon	Peters Green to South Mimms Ph1	[redacted]
	Storage (Allowance - actual/forecast)	[redacted]
	Total	[redacted]
NW	Storage (Allowance - actual/forecast)	[redacted]
WM	Storage (Allowance - actual/forecast)	[redacted]
	NGG Total	**65.2**

Table 10

NGN

The following projects[4] were identified by NGN as no longer required during the control period, either as a result of alternative solutions or forecast lower gas throughput:

Project/Expenditure category	Cost Removed (£m)
North Seaton re-inforcement, Towton to Askham Bryan reinforcement Tyrsall Regulator, Whitehall Road upgrade East Bierley PRI upgrade	[redacted]
Total	**9.0**

Table 11

SGN

The allowances for the following projects and expenditure identified in the detailed return have been removed less any actual or forecast expenditure:

GDN	Project/Expenditure category	Cost Removed (£m)
Sc	East Kilbride - Plant Upgrade Bathgate PRS/Armadale Gartcosh PRS Granton to Grangemouth revalidation & tie-ins Irvine Reinforcement (Springside-Shewalton) Eaglesham Rein. (Thornton-East Moorhouse) Motherwell 19bar links (2 locations:Cleekhimin & Central Scotland Reinforcement. Phase 2 (Storage)	[redacted]
	Total	13.9
So	Braishfield to Winterbourne Gunner Uprating Leighton Buzzard Reinforcement (Galley Farm to Van Barton Stacey NTS offtake Stoneham Lane PRI New PRI 's required due to growth (Ashford, Hooley PRI Woking PRI Chislehurst PRI Swanage Portsdown Hill PRI Dyke HP/IP PRI Battle HP/IP PRI Barton Stacey to Stoneham Lane Reinforcement	[redacted]
		83.4
	SGN Total	**97.2**

Table 12

[4] Subsequent to this report being prepared NGN have identified further projects that are not now required during this period of at least £12.5M

WWU

The allowance has been reduced by [redacted] as a result of the postponement of the Bancyfelin to Lampeter pipeline beyond the current control period.

We recommend that in future as part of the RRP data collection, Ofgem gathers LTS and Storage capex information for whole project life (expenditure to date and forecast to completion). Such information should be gathered for the whole control period including the material deliverables or outputs expected for the expenditure.

We also recommend that Ofgem reviews LTS and Storage capex expenditure in the context of whole project life and over the whole control period to take account of the phasing of expenditure between financial years rather than considering each year in isolation.

We further recommend that the 'revised' allowances in Table 9 are used by Ofgem to compare GDN performance on LTS and Storage capex over the current control period.

6.4.1.1. Peak Gas Demand Forecasting

Peak gas demand is a key driver for LTS and Storage capex and with lead times for major projects, decisions to proceed are often based on forecasts of peak demand made at least 3 years ahead. Clearly decisions can be reviewed as demand forecasts are updated to take account of more recent actual weather and gas demand data but significant expenditure may well already have been incurred by the time such revised information is available.

All GDN owners have reported postponement or cancellation of LTS and Storage projects as a result of downward revisions of peak gas demand forecasts affecting every network. These revisions are ascribed by GDN owners to the effect of the global recession and the resulting economic downturn and increasing energy efficiency, particularly associated with domestic property insulation and central heating boiler replacement.

Whilst the effect of these factors on annual gas demand is itself uncertain, the effect on peak gas demand is more difficult to forecast given limited experience of the severe weather to which the expected peak demand relates. Some GDN owners have referred to this situation in their responses to questions raised on the subject of demand forecasting. NGN in a response to a question on their 2009/10 RRP commentary, comments that:

"It is important to note that peak demand is more resilient than annual demand this was evidenced in the last winter which included a period of sustained cold weather which was the coldest for over thirty years and peak demand increased as shown in the charts. The relationship between annual and peak demand has been gradually changing over a number of years with demand becoming more 'peaky', i.e. load factors have decreased. NGN will continue to review the case for the LTS projects in light of future expected peak demand"

Whilst WWU provided commentary by National Grid on demand forecasts they provide to WWU, an extract from that for 2010 indicates:

"The relationship between annual gas demand and the 1 in 20 peak day gas demand forecast continues to be based on historic relationship and observed behaviour. The winter of 2009/2010 included a period of sustained cold weather that was unlike anything previously experienced in the last thirty years. This gave us an opportunity to observe the impact of colder weather on gas demand. In many LDZs, demand was a small percentage higher than

we had forecast for these weather conditions. The relationship between annual and peak demand has been gradually changing over a number of years with demand generally becoming more 'peaky', i.e. load factors have decreased"

The comment in the latter quote about 2009/10 cold weather experience is borne out in a response to an action from the cost visit, which indicates that after a series of years when the calculated peak demand based on actual weather conditions experienced was less than that forecast even 1 year ahead, in 2009/10 the calculated peak demand was 1.35% higher than forecast.

At the cost visit SGN gave a presentation on their work to develop a new demand forecasting tool. Whilst from the limited review possible under this assignment and with limited information, it is not possible to comment on the robustness of the forecasting processes employed by any of the GDN owners, it is likely that the trends described above were not apparent at the time the GDPCR allowances were set. It is arguable whether these trends could have subsequently been identified earlier but as a substantial number of projects have been postponed or cancelled there is no evidence of unnecessary expenditure above that which was already committed for the early stages of these projects.

Given the importance of the peak demand forecasting process to effective and efficient provision of network capacity and the particular difficulties associated with peak v annual relationships, we recommend that Ofgem undertakes with the GDN owners, a review of the gas demand forecasting processes with a view to share learning, establishing a common basis for presenting demand data and tracking, identify scope for improvement and to confirm fitness for purpose.

6.4.2. Reinforcement Mains

6.4.2.1. Work In Progress

Wales & West

An issue was identified by WWU regarding the impact of work in-progress (WIP) upon work load and cost statistics for this area of expenditure. The issue occurs due to the reporting requirements placed upon the networks for recording work and expenditure.

Work (length of pipe laid) can only be reported once the pipe has been commissioned to support the gas network. For some projects, particularly large projects, pipe can be laid awaiting commissioning such that the costs relating to the installation of the pipe are incurred in one financial year but the units of work are recorded in the subsequent year once commissioning has been completed.

This situation can distort the statistics and regressions in both years. As a consequence of this misalignment due to WIP at year end, the unit costs and benchmarking of performance for a particular year are inaccurate. In the normal course of events the carry-over of workload at year start and year end will generally balance out with minimal effect. However, major projects may have a significant effect and consideration should be given to a 'workload accrual' process to ensure alignment of workload with cost.

Regression analyses – The 2009/10 WWU commentary regarding reinforcement mains deals with adjustments to 2008/09 performance due to incorrect allocation of 2.4km of work to specific reinforcement instead of

connections. This affects the results of the regression analyses and benchmarking comparisons for both activities. This and other significant issues relating to consistency and accuracy of reporting across the activities require consideration with a view to amending the analyses.

North West

The 2009/10 ranking has been affected by the Rossendale project and the associated cost/workload data collection misalignment. Presumably this issue will distort performance for 10/11 when reported.

Extract from commentary:

NGG have stated in their commentary *'Expenditure on reinforcement mains during 2009/10 of £4.8m was £2.4m above the allowance and £4.3m above the previous year. This was primarily due to £3.0m associated with the Rossendale reinforcement where the length has not yet been recorded as the pipeline has not yet been commissioned. Without the Rossendale expenditure, net capex would have been £1.8m. This largely accounts for the high unit cost, which would have been around £290/m without this project'*

Again the misalignment of cost and workload reporting, due to reporting of workload when a project is finally commissioned, distorts annual performance assessment particularly when a major project completion crosses a year end. Comparison of cost effectiveness with other GDNs is undermined as a consequence.

We therefore recommend that Ofgem adjusts the NW reinforcement figures in 2009/10 prior to the regression analysis to account for the 'Rossendale effect'.

Discussions at the visit with NGG suggested that these circumstances are rare in that during the normal planned process, work will be undertaken in the spring/summer and the pipes commissioned prior to the winter. We therefore believe WIP should be managed on an exception basis and all owners are asked to flag such WIP issue at the time of future submissions.

6.4.3. Governors

6.4.3.1. Wales & West

2009/10 unit costs for both the renewal & growth categories of governors are higher than 2008/09, e.g. the 2009/10 gross unit cost for the growth category is 115% higher than 2008/09. It is noted that the commentaries raise issues regarding the accuracy of expenditure allocations to particular years nonetheless the increases in unit costs are significant. The variance compared to the allowance for 2009/10 is significant at +£2.1m. We recommend is followed up with the network.

6.4.4. Other Capex

6.4.4.1. General

We have reviewed the submissions made by the network owners as requested by Ofgem. Given the nature of the expenditure in this area we found it very difficult to undertake assessments comparative or otherwise of this expenditure, by considering the actual expenditure in discrete years. This is due to expenditure potentially being delayed until subsequent years for a variety of reasons. Table 13 below shows for each owner the total Other Capex expenditure in the first two years of the control period and the forecast 5 year expenditure. Each of these is show as a variation for the allow (Pre IQI).

	Two Year Expenditure	Variance	%	Forecast Five Year Expenditure	Variance	%
SGN	102.3	3.8	3.9%	208.6	104.4	100.1%
NGN	40.7	-14.1	-25.8%	90.7	-15.7	-14.8%
WWU	55.6	5.2	10.4%	123.1	5.1	4.3%
NGG	170.8	70.9	70.9%	370.8	70.9	23.7%

Table 13

Only WWU figures gave a creditable comparison to the sums provided for in the Ofgem allowances at the last price control. It appears that SGN and NGG are funding the overspends in Other Capex from the reduction in LTS Capex required due to the download in forecast gas demands. We recommend that Ofgem investigates further the intended application of the price control in this area.

6.4.4.2. IT Expenditure

IT spend is a major controllable spend area in the Other Capex category. This is an area in which significant differences of approach and efficiency can be achieved by the network owners. In order to provide comparisons between the four network owners some form of normalisation is required.

The approach which has been taken is based upon our view that certain costs of any IT project will be incurred whatever the size or number of networks under the control of the owner. These costs will be associated with specifying design and requirements of the system, developing the code to meet these requirements (or in the case of packaged solutions such as SAP the costs of configuring the package to meet the owner's specific requirements), testing and certain IT hardware procurement. Implementation costs are expected to be more proportional to the size of the business under the control of the owner. Such costs will include training and IT hardware provision to staff.

The breakdown of actual costs between development and implementation has not historically been captured therefore for the analysis to be carried out some form of estimate must be made of this breakdown. The actual split between development and implementation costs will vary from project to project and company to company. By using a range of potential splits these variations can be tested as sensitivities before conclusions are drawn.

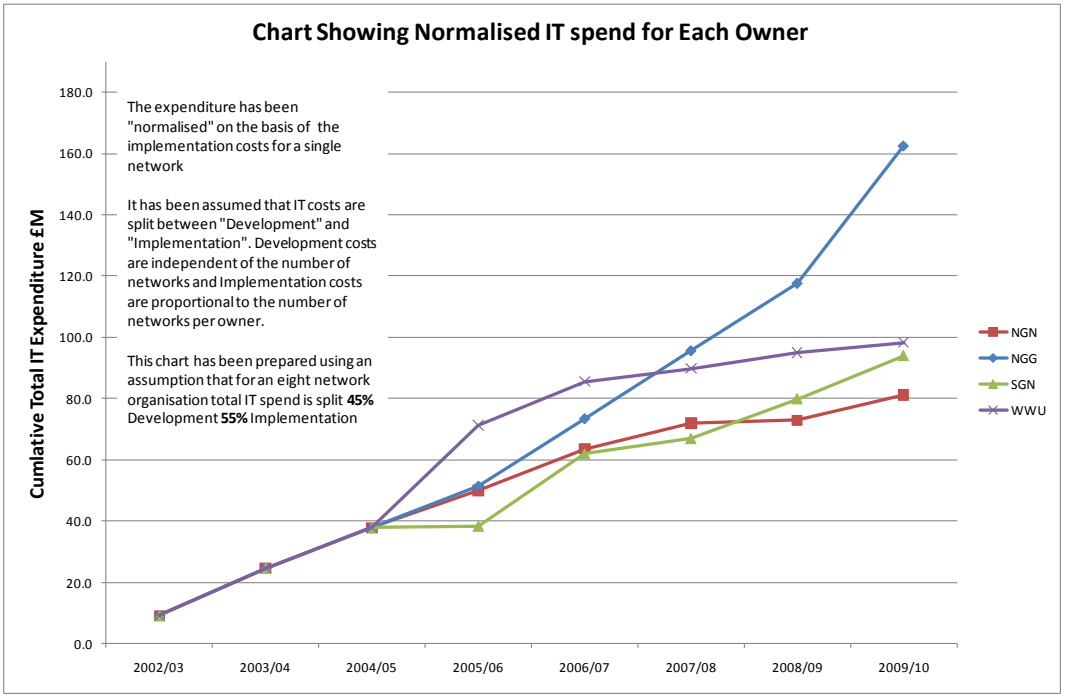
The modelling which we have used assumes that the development costs for an eight network model (the National Grid configuration prior to network sales) would range between 30%-60% of the total project costs. NGG has been asked for their view on the percentage development costs for their current GDFO project which is the larger IT project of all of the owners. They have estimated that for this project 72% of the total project costs would be development costs. For a theoretical eight network model this equates to 56% within the range we have assumed. We do believe this is perhaps high for most IT projects and have therefore use 45% as a baseline model. It can be seen from the graphs below as this percentage rises the NGG expenditure on IT becomes more and more of an outlier. We have also provided two other charts to review the sensitivity if the percentage of fixed costs varies. These charts show the results for 30% and 60%. In each case the general picture is sustained with only relative levels changing.

This assumption has been used on a consistent basis for all owners for the expenditure 2002/03-2009/10. The three years 2002/03-2004/05 have been included to show the trend before and after network sales. Expenditure for all owners for these years has been considered equal due to the common ownership under National Grid.

The analysis shown below has been further approximated by assuming each network is of common size. More detailed analysis is possible which uses networks of different sizes (for example proportional to the number of supply points or gas throughput in each network) although this would be outside the scope of the current work. However we believe analysis carried provides a reasonable basis for analysing trends between networks.

Higher comparative investment in IT may not merely be evidence of inefficient spend as it may represent higher well targeted investment to improve overall opex performance. For this to be the case high IT spend must be associated with outstanding overall opex regression performance.

The "normalised" figures for each owner are based on the development costs plus the implementation costs of a single network.



Baseline model (45%) Figure 4

Owner	Commentary
SGN	The chart shows that initially SGN had minimised IT investment to effect the necessary change for network sales. However, their IT investment trend is now starting to increase back to and possibly above longer term average investment rates.
NGN	The chart shows that NGN have achieved trend average IT investment rates even during the period of the network sales and are potentially the best performing network in terms of comparative IT investment trends.
WWU	The chart clearly shows the stepped investment made by WWU at the time of networks sales. Having made this step change WWU is now showing to be the network with the lowest ongoing IT investment in subsequent years.
NGG	In the first year (2005/06) after network sales NGG appears to track in line with pre-sales trends. However after this date the expenditure starts to rise above trend and this increase accelerates towards the end of the period. NGG are therefore clearly investing at a greater rate than all other networks. With the planned large investment in the new GDFO systems there could be a perception that NGG are having to "catch-up" with other networks that had to invest in new systems at the time of network sales. These charts clearly demonstrate that IT expenditure in NGG have not been through a "fallow" period.

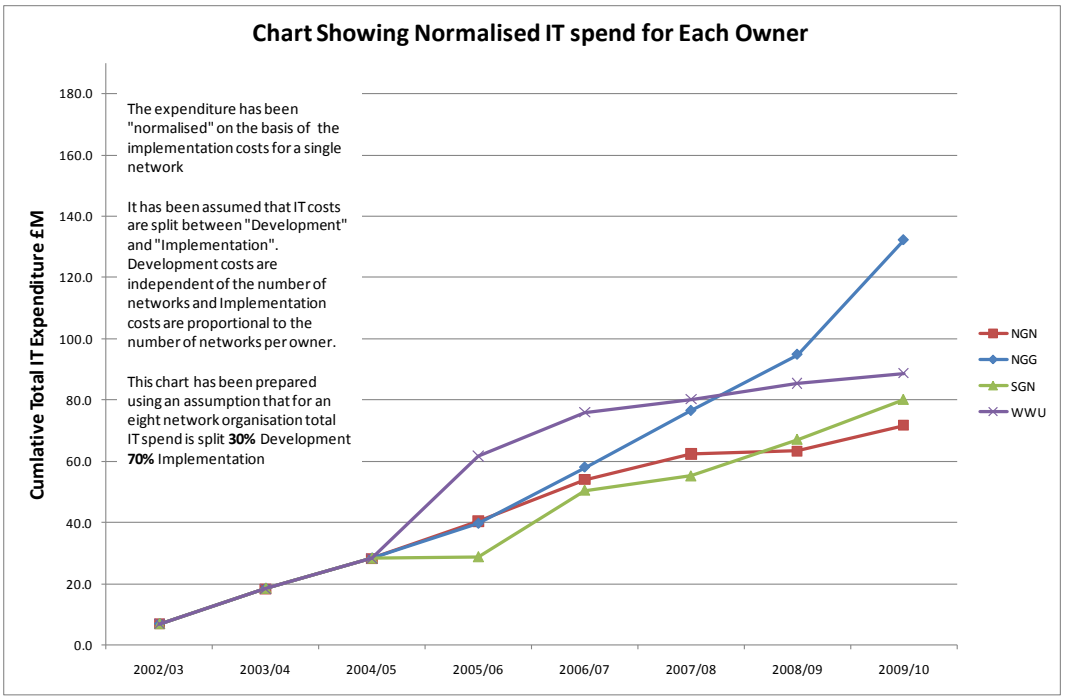
Table 14

The analysis shown above suggests that NGG are significantly moving away from the other three owners in the expenditure of IT. It is not possible in the scope of our current work to provide a detailed assessment of the efficiency or otherwise but our modelling provides evidence to suggest further investigation may be appropriate particularly in the light of the amount of GDFO expenditure still to be made by NGG.

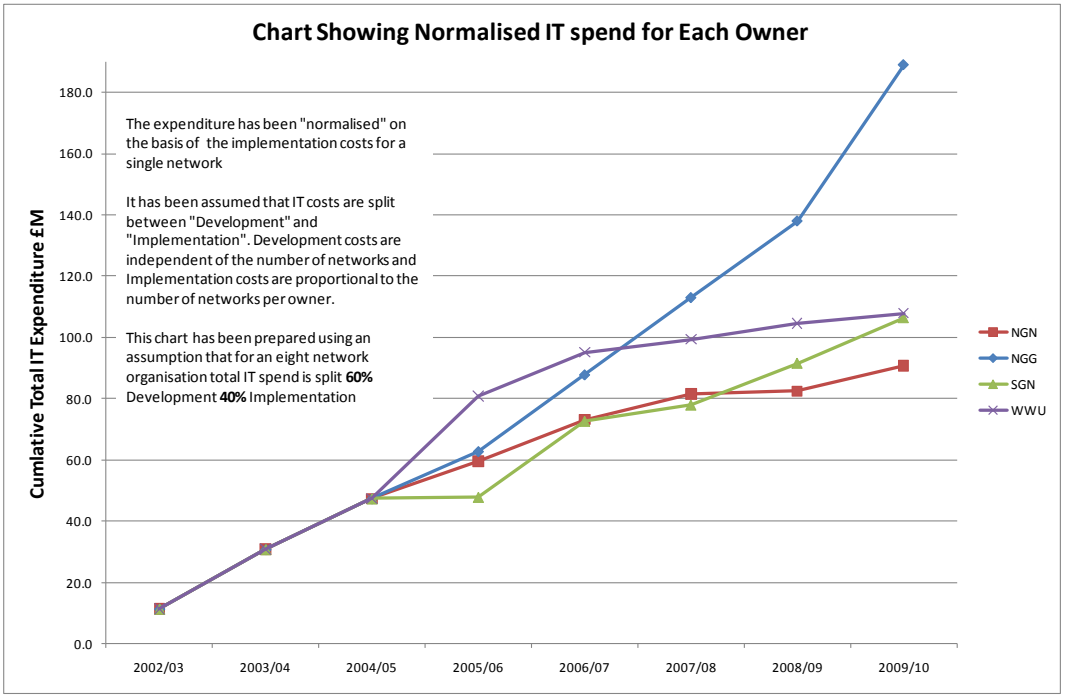
It could be expected that the size and experience of the large corporate IT function available to NGG would provide benefits from its scale to reduce the IT investment costs. This does not seem to be evident and concern must be given to the impact of running both the UK and USA gas distribution businesses from the same IT organization. At the presentations NGG clearly stated that the USA did not influence the development of the UK solutions.

In visiting all of the owners and hearing their submissions we have formed the opinion that the other owners (NGN, SGN, & WWU) have IT organisations which are demonstrably closer to the gas distribution business they are serving.

We recommend that Ofgem considers enhanced cost capture for IT projects which cover the whole lifecycle (potentially outside control periods) together with associated benefit tracking. We consider it important that the assessment of IT is not on investment cost alone but is integrated with the output delivery which should be evident from its implementation.



Low model (30%) Figure 5



High model (60%) Figure 6

6.4.4.3. System Operations

GTMS Replacement & SOMSA Exit

The need to replace the current Gas Transportation Management System (GTMS) has been flagged for some time and is now considerably overdue. Essentially the system is 'obsolete and requiring replacement' and we will not revisit this reasoning in this discussion. The replacement is complicated by the need to unpick the current systems to deliver autonomy to the divested networks (WW, No, Sc & So) in respect of the operation of the System Operation systems.

At the time of network sales these operations were carried out centrally by NGG in the Midlands. The services offered by NGG were managed under a service agreement, System Operation Managed Service Agreement (SOMSA).

In order to exit this agreement the new owners needed to recruit and train staff, procure their own systems and put in place supporting resources and infrastructure. The four owners agreed that the existing GTMS system should be replaced under a collaborative arrangement providing a common system which could be delivered into the four operational centres. The plan involved a phased approach delivering centrally at first to prove operational acceptance of the new system and then transfer to the three other centres. At the time of GDPCR report (Summer 2007) the indications for exit dates for the three owners were SGN Summer 2008, NGN Spring 2009 and WWU Summer 2009. These dates were based on the expected delivery of phase 1 of the project being Spring/Summer 2008.

It is clear that this procurement project has been a troubled experience for the collaborative purchasers in that a number of delays to the delivery of the project have been experienced and no operational systems have yet been delivered. The expected delivered of the first operational system is now Summer 2011.

The intended period from place of contract with Serck Controls (September 2006) to the implementation of the first operational system (June 2008) was 18 months. Assuming a successful delivery in 2011 the timescales for first implementation of the new system will have been extended to 55 months.

Given the difficulties experienced, three reviews were commissioned by the partners between 2007 and 2008. In 2009 the partners commissioned a further independent report, from Enzen Global Limited. Enzen were requested to provide an assessment of which route should be taken to proceed with the project in the light of the difficulties experienced. This review considered all options, including abandoning the existing contract, in the context of ensuring a delivery of operational systems by the Winter of 2010/11. The report concluded that it was already too late to achieve a delivery of Winter of 2010/11 but recommended the existing solution with Serck Controls be continued with fundamentally enhanced management structure and controls being put in place to ensure delivery.

The Enzen report states that the monthly expenditure was running at £670,000 and a 37 month delay could imply almost £25m of additional cost. We state this figure only to give an indication of the scale of the additional expenditure due to delays to the implementation of the project. We cannot within the scope of our work, undertake a complete audit of the project and form an assessment of potential inefficient expenditure but we will provide some commentary on the areas which we believe require further investigation by Ofgem.

The case for the project difficulties presented by NGG at the cost visit placed the majority of the blame upon the third party supplier Serck Controls. The proposition was made that software coding difficulties by the supplier caused errors which were difficult for collaboration partners to discover until late in the project cycle.

We suspect that such software errors were indeed the cause of a number of problems however we are surprised that NGG did not exert a greater impact on the course of the project as an informed buyer. NGG knowledge and experience of both IT and real time control systems should have placed greater risk management control upon the project than would appear to be

the case. They seem to have missed opportunities at a very early stage in the project when the partner ATOS Origin withdrew from the project. This left Serck Controls without an experienced integration partner particularly in the area of the business applications which were being delivered as part of the contract. The report by Enzen identified significant shortfalls in the management structure of the project with lack of clear responsibilities and accountabilities and in particular the lack of a system integrator. The review also instigated the concept that the business applications should be de-coupled from the Scada system[5], thus allowing Serck Controls to deliver the traditional product set required to be a replacement for GTMS, together with a defined interface output to the separately developed business application. We believe, based on the presentation from WWU and NGG, that the project has now received the necessary control structure and technical development plan such that there is now a much greater confidence that operational delivery will be achieved next year.

We recommend that a full review of this project should be undertaken on the basis of establishing the efficiency of the expenditure. However the review should be undertaken once the system is operational. In the meantime far better information needs to be gathered on the expenditure to date in anticipation of feeding into the review.

Expenditure Comparisons

Table 15 recorded the submissions by all owners at the time of GDPCR on System Operator capex between April 2006 and March 2013.

Total submitted Expenditure GDPCR Apr 2006 - Mar 2013 £m (2009/10 Prices)	NGG	SGN	NGN	WWU	Total
GTMS Replacement/SOMSA Exit[6]	21.9	11.2	18.8	14.0	65.8
Telemetry	0.7	0.0	11.9	14.1	26.7
Other	0.9	0.0	0.0	0.0	0.9
Total	23.5	11.2	30.7	28.1	93.4

Table 15

[5] NGG note that this approach was in the original ITT, but breached by the supplier

[6] This expenditure includes the GDNs own expenditure and that recharged from NGG

Table 16 shows the total System Operations expenditure between April 2006 and March 2010.

Total System Operations Expenditure Apr 2006 – Mar 2010 £m (2009/10 Prices)	2006/07	2007/08	2008/09	2009/10	Total
NGG	0.8	5.6	7.4	3.5	17.2
SGN	0.5	7.7	10.8	5.7	24.7
NGN	0.0	0.8	6.4	5.7	13.0
WWU	1.1	3.5	4.7	4.7	13.9
Total	2.4	17.5	29.3	19.6	68.8

Table 16

The table shows that expenditure carried out across all owners for the period April 2006 to March 2010 of £68.8m. We have not been able to establish, from the information presented, for all GDNs those sums specifically associated with GTMS replacement and SOMSA exit. NGG have noted the following items:

- Forecaster (a project to replace the legacy 'predict' application.) This project ran from 2007 to 2008 and with a net NGG cost of £0.8m.
- SC2004 replacement - this falls within 3 projects, 'common interfaces', interruption reform and residual functionality - the total cost of these 3 projects is estimated at £2.7k and completion is expected in Oct 2011.
- Legacy Telemetry - to replace 130 obsolete legacy outstations across 130 sites at a cost of £2.6m.

NGG has not split their forecast remaining expenditure between these additional systems and GTMS replacement but have declared a further £13.8m to March 2013.

WWU has provided the clearest explanation of this expenditure and has declared £4.7m of control room related expenditure to date. In addition they have forecast a further £10.7m to complete the GTMS replacement and SOMSA exit with a further £1.4m of related IT Infrastructure.

WWU Submission £m	2009/10	Prior years	Total to date	Future years	Total project
GTMS replacement	1.3	3.3	4.6	2.9	7.5
Non-system (inc Training)	0.5	2.7	3.2	7.8	11.0
IT Infrastructure	0.4	0.9	1.2	1.4	2.6
Telemetry separation	0.0	0.0	0.0	1.0	1.0
System control support applications	2.6	2.1	4.7	1.6	6.3
Total	4.7	9.0	13.7	14.7	28.4

Table 17

We have also not managed to obtain a clear total expenditure forecast to complete this work given at least 18 months further expenditure is yet to be recorded in these figures. Based on the forecasts provided by NGG & WWU we would estimate that the final total of System Operations capex is a further £50-60m on top of the £68m to date given a total expenditure of £120-130m compared to the £93m submitted at the time of GDPCR.

We recommend, as a minimum, that a similar level of clarity of information to that provided by WWU on System Operations capex, is obtained from each owner and would recommend a pro-forma is developed and issued to ensure consistency of data gathered. We further recommend that this should include information from all owners on which expenditure is to be funded by the shareholders as part of the networks sales process.

6.5. DISCUSSION OF REPEX ISSUES

6.5.1. LTS

The requirement for LTS replacement expenditure is generated by asset life and condition considerations and the implications of third party developments which may affect LTS assets. The latter is generally rechargeable. LTS expenditure is by its nature 'lumpy', can be expected to extend over more than one year and should be considered over the life of replacement project or the control period, rather than viewed and compared in isolation over particular financial years.

Three networks with separate owners are affected by significant LTS replacement works during the control period. These are as follows:

SGN

The Isle of Wight pipe replacement project was originally scheduled over the 3 years starting 2008/09, with the majority of the expenditure expected in 2009/10. Due to re-phasing, no expenditure was incurred in 2008/09 and only a minor amount in 2009/10, leading to a significant under spend against the allowance in those 2 years. However in response to an action from the costs visit, SGN has indicated a revised phasing for the work to be completed by the end of the control period and an expectation that actual expenditure will be £2.5m below the £19.9m allowance for the project, as follows:

Isle of Wight	2008/09	2009/10	2010/11	2011/12	2012/12	Total
LTS Repex (05/06 prices)	2.1	15.5	0.3	0.0	0.0	17.9
LTS Repex (2009/10 prices)	2.3	17.2	0.3	0.0	0.0	19.9
LTS Repex Actual/Forecast	0.0	0.3	13.0	3.1	1.1	17.4
Variance	**2.3**	**17.0**	**-12.7**	**-3.1**	**-1.1**	**2.5**

Table 18

This programme of expenditure differs from that provided by SGN in its RRP Forecast. We recommend that the above forecast and phasing is used as the basis for future performance comparisons during the control period.

NGN

At the time of its GDPCR submission NGN indicated that it was in the process of assessing numerous integrity reports from the Catton to Wetheral LTS pipeline, which indicated a number of significant faults along its length and suggested that the pipeline may not be fit for purpose. This single cross country pipeline is critical to maintaining security of supply to the west coast of the network. Based on the analysis at the time and results of field excavations and associated repairs, NGN anticipated that replacement may have been the only course to ensure security of supply and an allowance of £31m was included in the settlement.

Given the scale of the potential expenditure, NGN has subsequently taken the view that it was not prudent to proceed with replacement until further evidence of the nature of the faults found in the inspection report could be analysed together with details of any further deterioration over a number of years was available, they have thus allowed the pipeline to continue in service under an increased inspection regime. This has involved increasing the frequency of On Line Inspection runs and above ground surveys in order to gather detailed fault data and engaging expert advice to analyse these data and make recommendations on future remedial works. This approach has involved expenditure of £1.17m on the pipeline over 2008/09 and 2009/10.

NGN has indicated that it expects to be in a position during the first half of 2011 to make a final decision on whether an ongoing inspection and maintenance regime for the pipeline can be a long term alternative to replacement.

In our opinion, the steps taken by NGN represent a sound technical approach, particularly as much of the remedial work on the existing pipeline was required to assure continued operation up to commissioning of any replacement. NGN perhaps though might have indicated more clearly during the GDPCR discussions, that remediation was a potential alternative to replacement. We recommend that Ofgem accepts the NGN approach and requires full information on the replacement decision making process undertaken by NGN in 2011. We also recommend Ofgem reviews the price control process to ensure that the process can allow for known events which may have a wide range of financial outcomes.

WWU

WWU has reported a significant under spend of some £17.7m during 2008/09 and 2009/10, this is attributed principally to delays associated with

replacement of 3 pipelines in North Wales due to difficulties in obtaining consent from some landowners on the proposed routes of the first 2 pipelines. WWU has indicated that construction on the first 2 pipelines will now commence in February 2011, based on continuous working which has given a reduction in contractor costs following the re-tendering process for the new timeline. Construction of the third pipeline, which cannot commence until the other 2 have been completed, is now scheduled for 2012.

WWU has provided a 'waterfall' diagram following the costs visit illustrating forecast expenditure on LTS expenditure for the control period, which indicates a small expected over spend. We recommend that the current allowance for the control period is appropriate.

6.5.2. Mains & Services

6.5.2.1. Unit Costs

Traditionally unit costs have been captured above and below 180mm in pipe diameter. At the last price control the owners lobbied Ofgem to consider increasing the range of pipe sizes to reflect the fact that over the period of the control being considered pipes of larger diameter would be encountered which would be of greater cost due to the increased size. When looking at the returns for the financial years 2008/09 & 2009/10, little substantive progress been has been made by any of the owners to quantify the actual comparative costs for the different diameter bands.

The following figures show the unit costs captured for the owners from the last three years data. It is apparent that these unit costs do not yet accurately reflect the true costs of the different diameter bands.

We recommend that discussions are held with the owners to establish an agreed mechanism to capture true costs against diameter bands. However, at the present time we recommend the figures for 2008/09 & 2009/10 are not used to form an updated view of the relative costs of works across diameter bands for the regression analysis.

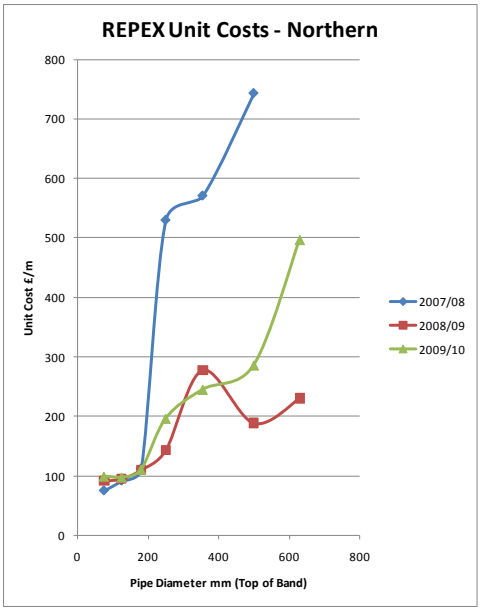
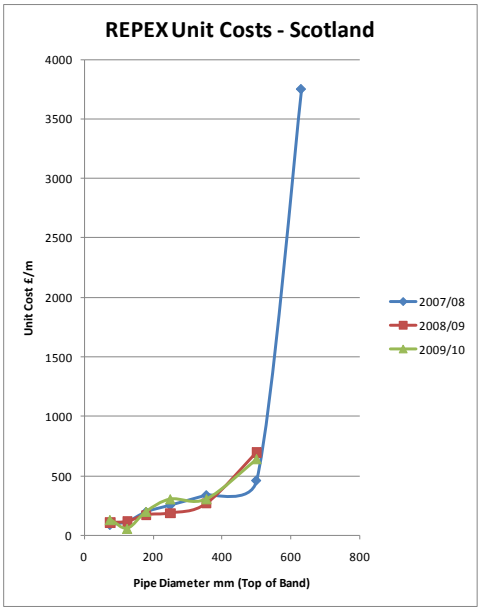


Figure 7



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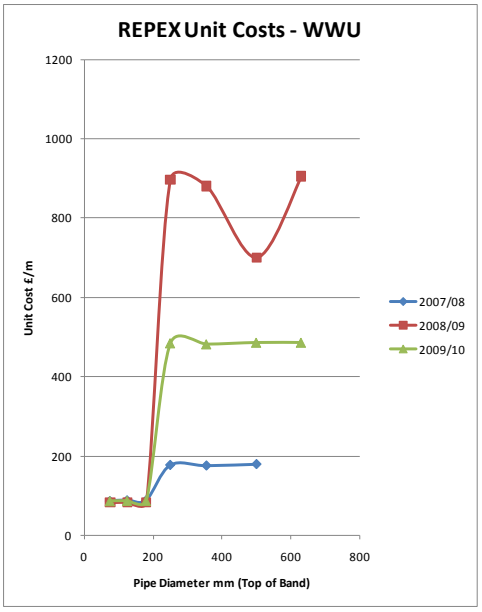

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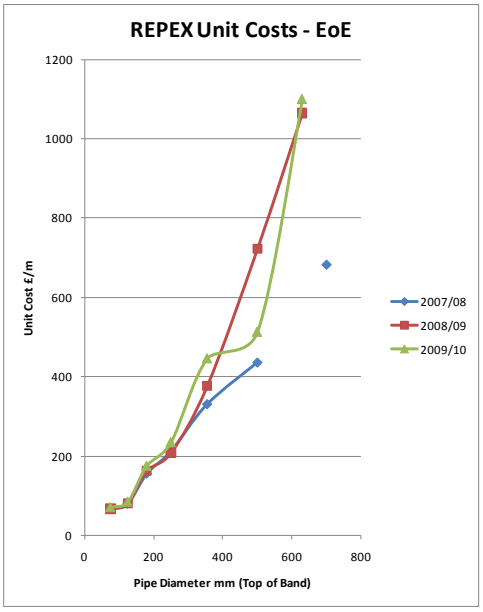

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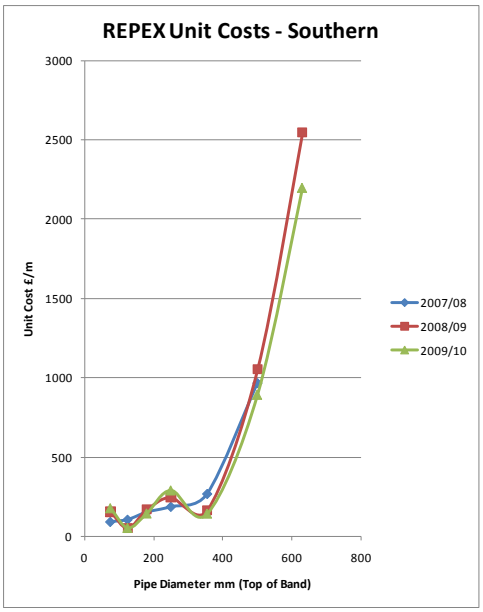
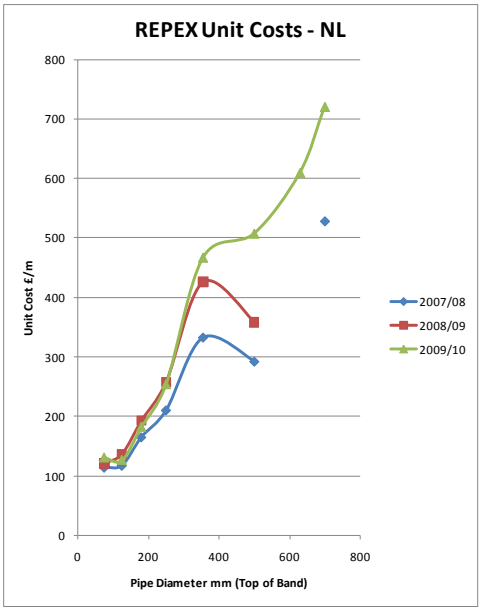


Figure 10



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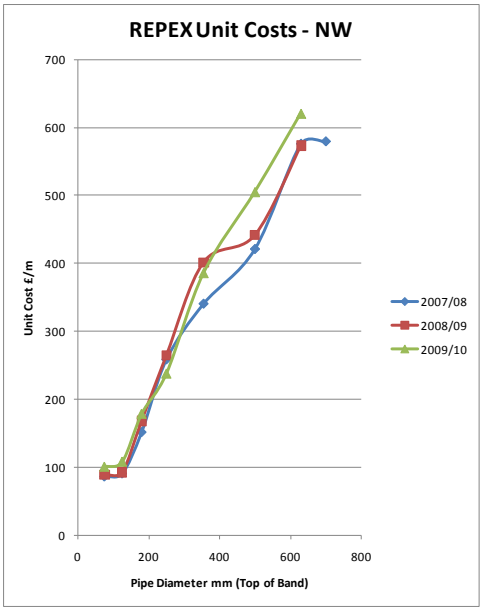

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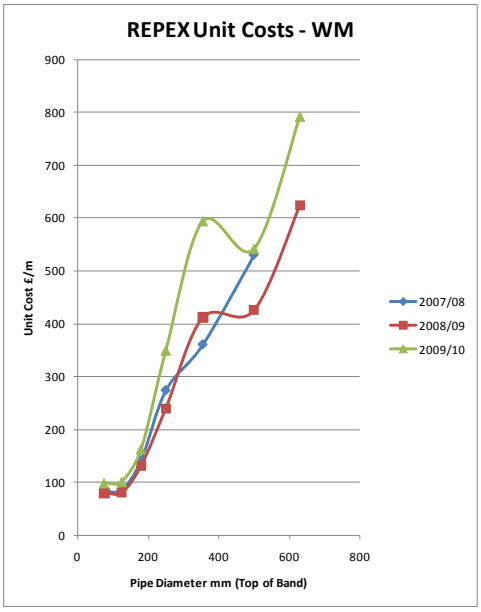

Figure 14