

Decision on strategy for the next gas distribution price control - RIIO-GD1 Outputs and incentives

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Target Audience: Consumers and their representatives, gas distribution networks, independent gas transporters, other network companies, gas shippers and suppliers, environmental organisations, investors, government policy makers and any other interested parties.

Overview:

This is the first gas distribution price control to reflect the new RIIO (Revenue = Incentives + Innovation + Outputs) model. RIIO is designed to drive real benefits for consumers; providing network companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector at a lower cost than would have been the case under our previous approach. RIIO puts sustainability alongside consumers at the heart of what network companies do. It also provides a transparent and predictable framework, with appropriate rewards to promote timely investment in the networks.

Having consulted on our initial strategy for the next gas distribution price control, this supplementary annex to the main decision document sets out our decision on the outputs that the network companies will need to deliver over the price control period, and the associated incentive mechanisms. This document is aimed at those seeking a detailed understanding of our proposals. Stakeholders wanting a more accessible overview should refer to the main decision document.

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Associated Documents

Main decision paper

- Decision on strategy for the next gas distribution price control - RIIO-GD1
<http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1decision.pdf>

Links to supplementary annexes

- Decision on strategy for the next gas distribution price control - RIIO-GD1 Tools for cost assessment
<http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1decisioncosts.pdf>
- Decision on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Business plans, innovation and efficiency incentives
<http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decisionbusplan.pdf>
- Decision on strategy for the next transmission and gas distribution price controls -RIIO-T1 and GD1 Financial issues
<http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decisionfinance.pdf>
- Decision on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Uncertainty mechanisms
<http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decisionuncert.pdf>
- Glossary for all the RIIO-T1 and GD1 documents:
<http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decisionloss.pdf>

Links to other associated documents

- Decision on strategy for the next transmission price control - RIIO-T1
<http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decision.pdf>
- Consultation on strategy for the next gas distribution price control - RIIO-GD1 Overview paper (160/10)
<http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/RIIOGD1%20overview.pdf>
- Consultation on strategy for the next gas distribution price control - RIIO-GD1 Outputs and incentives
<http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20outputs%20and%20incent.pdf>

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1. Introduction

Chapter summary

In our December document, we set out approach to the development of the outputs framework, and we consulted on regulatory reporting arrangements, and changes to output measures during the price control review. This chapter briefly summarises our December proposals, respondents' views, and our decision and further thoughts on these issues. We also set out the structure of this document.

Structure of the suite of documents

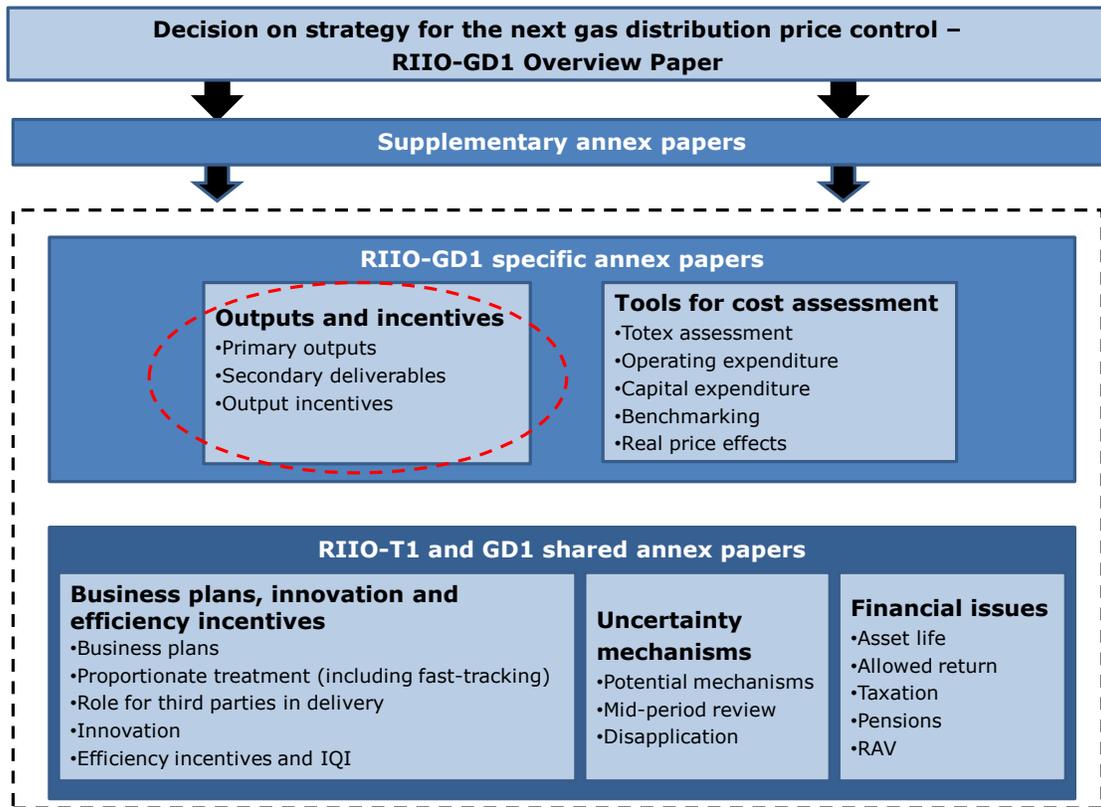
1.1. The next transmission and gas distribution price controls, RIIO-T1 and GD1, will be the first to reflect the new RIIO model. In December 2010, we consulted on our initial strategy for the two price control reviews. The overview document of our initial strategy for RIIO-GD1¹ included a supplementary annex which set out our proposals for the outputs that the network companies will need to deliver over the price control period, and the associated incentive mechanisms.

1.2. Following consideration of responses received to the initial strategy consultation, this document sets out our decision on the outputs that the network companies will need to deliver over the price control period, and the associated incentive mechanisms. This document is aimed at those seeking a detailed understanding of our decision. Stakeholders wanting a more accessible overview should refer to the RIIO-GD1 overview paper. The price control will be set for an eight-year period from 1 April 2013 to 31 March 2021.

1.3. Figure 1.1 below provides a map of the RIIO-GD1 documents published as part of the suite of decision documents.

¹ Consultation on strategy for the next gas distribution price control - RIIO-GD1 overview paper, <http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=251&refer=Networks/GasDistr/RIIO-GD1/ConRes>

Figure 1.1: RIIO-GD1 Supplementary appendix document map*



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

Summary of key decisions

1.4. Our strategy decisions on the outputs and associated incentives have taken into account stakeholders' views on the proposals in the December document. We have considered both written responses as well as feedback given in working groups, stakeholder forums and bilateral discussions. We are grateful to those that have taken the time to make contributions to this process.

1.5. Our overall decisions broadly reflect the outputs and associated incentive mechanisms we consulted on in December. There are no radical changes. However, working with stakeholders, we have refined the output measures and incentive mechanisms since December. The following table provides a high level summary of our December proposals and March decision by output category. We provide more details in the relevant output chapters in this document.

Table 1.1: Summary of output and associated incentives proposals and our decision

Policy area	December proposal	Our decision/way forward
Environment (broad measure) ¹	Proposal to require companies to report on the % of bio-methane capacity connected to the networks Proposals to facilitate the connection of bio-methane	Confirmation of the bio-methane reporting arrangements; discretionary reward scheme (DRS) for companies that deliver environmental outputs not funded at price review Introduction of connection standards and provision of information for bio-methane connections We will consider connection boundary and charging arrangements for bio-methane in a separate process to the price review
Environment (narrow measure) ²	Continuation (with modifications) of the current shrinkage allowance, and Environmental Emissions Incentive (EEI)	Decision to continue and strengthen the shrinkage allowance and EEI; to align carbon value with Department of Energy and Climate Change (DECC)'s non-traded carbon value, and to remove caps/collars on the EEI
Customer service	Broad measure of customer service, comprising customer satisfaction survey, complaints metric, and discretionary reward for stakeholder engagement	Confirmation of the broad measure, and details of how the three elements will work in practice Move to incentives based on industry historical upper quartile performance for satisfaction and complaints
Social obligations	Proposals in relation to Carbon monoxide (CO) and fuel-poor network extensions scheme DRS for companies delivering outputs in relation to social objectives not funded at review	Confirmation of the proposed schemes, including DRS Detailed arrangements for the fuel poor network scheme We will confirm our policy proposals for CO once current trials are complete
Customer connections	To introduce regulated margins in contestable markets; reconsider the market segments covered by the connection standards; intend to introduce standards for distributed gas customers and revise the standard timescales and penalties	Decision to maintain current margin arrangements, and guaranteed standards for existing market segments Introduce connection standards of service for distributed gas entry customers during RIIO-GD1
Safety	Replacement of the current approach to funding repex based on iron mains replaced, with an output measure based on risk removed	Confirmation of our intention to introduce a risk-removed output measure, and options on how this will work in practice Preferred option to be confirmed following companies' business plan submissions
Reliability	Development of capacity and asset health output measures Unify incentive arrangements for meeting incremental load growth Real option price included in interruptible contract price	Confirmation of these output measures, and details on the incentive arrangements
Broad approach to asset management	Development of risk-based approach to asset management	Confirmation of risk-based approach Licence condition to mandate the collection of data on asset health and risk to be introduced ahead of 2013

Note: (1) We define “broad environmental measure” as the contribution the company makes to wider (ie Great Britain (GB)) environmental objectives, eg the facilitation of bio-methane connection which contributes to the UK’s carbon reduction targets. (2) We define “narrow environmental objectives” as improvements to the company’s own environmental impact, eg reduction in the company’s own carbon emissions.

Structure of document

1.6. The remainder of this document sets out our decision on the outputs and incentive mechanisms for each output category.

1.7. In addition to a chapter for each of the six output categories, we also set out our decision on the proposed review of xoserve, which provides transactional services to network users on behalf of the GDNs. We also set out our decisions on the proposed approach to the development of a broad approach to asset management for the gas distribution sector.

Chapter 2: Outputs framework

Chapter 3: Environmental impacts

Chapter 4: Customer service

Chapter 5: xoserve

Chapter 6: Social obligations

Chapter 7: Connections

Chapter 8: Safety

Chapter 9: Reliability

Chapter 10: Broader approach to asset risk management

2. Outputs framework

Chapter summary

This chapter provides an overview of the key outputs for RIIO-GD1, a summary of the responses we received and our decision on the outputs framework. We also set out the reporting requirements for the network companies in respect of the outputs.

Introduction

2.1. In our December document, we asked for respondents' views on our approach to the development of the outputs and incentives package. We also asked respondents' views on whether we should introduce additional reporting requirements on companies to enable us to monitor and evaluate their performance against the outputs package. We also invited views on our proposed approach to modifying output measures within the price review period. In this chapter, we briefly summarise our December proposals, stakeholder views, and our decision with regard to these issues.

2.2. We summarise our key proposals and decisions on output measures and incentive mechanisms in Table 1.1 in Chapter one. We will continue to refine the reporting requirements for the output measures in our output working groups. An important aspect of our further work will be to ensure that the reporting requirements are proportionate. We have also engaged consultants to examine how we can ensure the accuracy of companies' data submissions, and we set out our intended approach below. We also confirm our position to revisit outputs only within the scope of the limited mid-term review, or where there is measurement error or the measure is unfit for its intended purpose.

Development of outputs framework

Summary of consultation proposals

2.3. By prescribing a set of outputs to be delivered rather than a set of inputs, an outputs based approach provides powerful incentives for companies to innovate and seek least cost ways to providing network services. An outputs based approach should provide material benefits to customers in terms of lower bills. The approach also provides a greater opportunity for stakeholders to determine what outputs companies should deliver, and greater transparency with regard to companies' performance and our ability to hold networks to account.

2.4. The RIIO model identifies six key output categories - or key areas of delivery for network companies. These are: environmental impact; customer satisfaction; safety; reliability; conditions for connection; environmental impact; and, social obligations. In our December document, for each output category we identified specific outputs and incentive mechanisms in order to promote the following specific behaviours:

- Environment: encouraging companies to play their role in the achievement of broader environmental objectives, namely the reduction in carbon emissions, as

well as minimising the “narrow” environmental impact of the company’s activities by managing their own carbon footprint.

- Customer satisfaction: maintaining high levels of customer satisfaction, and improving the service levels provided where required. We also seek to encourage companies to undertake effective engagement with their stakeholders, and reflect stakeholders’ views in the day-to-day operation of their business.
- Connections: encouraging networks to connect customers in a timely and efficient way, including responding to the specific needs of distributed gas, including bio-methane, customers.
- Social objectives: extending the gas network to communities who are fuel poor where it is efficient to do so (and where it is not, working with other parts of the energy industry to meet the needs of the fuel poor), and introducing measures to address incidents of carbon monoxide (CO) poisoning.
- Safety: ensuring the provision of a safe network in compliance with HSE safety standards, and improving their asset knowledge to ensure companies develop well-justified investment plans.
- Reliability and availability: promoting a network capable of giving long term reliability as well as minimising the number and duration of interruptions experienced over the price control period, and ensuring adaptation to climate change.

2.5. We established working groups in July 2010 to identify output and incentive mechanisms for each of the six output categories. The working groups included the network companies, as well as other stakeholders, including environmental, social, and customer representative groups, as well as the HSE. We also held a significant number of bilateral meetings with companies and other stakeholders in relation to specific output issues. We also used the price control review forum (PCRF), comprising a wide range of companies and other stakeholder groups, to discuss the overall outputs package. We also tested our proposed outputs package with the Consumer Challenger Group (CCG), our internal group of consumer and network user group representatives.

Stakeholder views

2.6. Most respondents supported our approach to the development of the outputs framework. In particular, respondents welcomed the development of the output measures through the use of the working groups, comprising both network companies and wider stakeholder groups.

2.7. A number of the respondents noted that the timetable for the development of the outputs and incentives had been relatively tight, and that we would need to continue to develop the outputs package post March. GDNs also noted that their stakeholder engagement process was ongoing, and that our decisions in March should be sufficiently flexible to accommodate their stakeholder views on the outputs package.

2.8. The GDNs also considered that further work was required on associated incentive mechanisms. In particular, they considered that the incentive framework needed to be strengthened to provide greater incentives for outperformance.

Our decision/further thoughts

2.9. We have considered in detail respondents' views on the proposed outputs and incentive mechanisms. We have accepted a number of proposed changes to individual mechanisms. We summarise the proposed outputs and incentive mechanisms in Table 1.1 in Chapter one. In general, we have sought to ensure that the rewards/penalties associated with incentive mechanisms reflect the value that consumers place on the output, and that incentivised output measures fulfil the requisite criteria (ie controllable, material etc.) to ensure companies and consumers do not face windfall gains or losses.

2.10. We have also undertaken a quantitative analysis of the overall incentives package using our return on regulated equity (RORE) framework. We consider that the overall package offers companies that outperform the regulatory settlement sufficient upside reward, and appropriate penalties for companies that underperform. We set out our RORE analysis in 'Supplementary Annex - T1 and GD1 Financial issues'.

2.11. We will continue to work with the industry and other stakeholders in the coming months on the outputs framework and regulatory reporting. In most cases, where we have set out detailed definitions and incentive mechanisms, the focus will be on finalising the reporting requirements. However, there are a small number of cases where we will require further work on the definition of the output and the mechanism. In particular, as set out in Chapter ten, we will need to finalise the output measure and incentive structure for the repex programme once we have received companies' business plans in July.

2.12. We expect companies' own stakeholder engagement to inform their business plans in a number of important areas. However, we do not expect companies to propose new output definitions and incentive mechanisms for issues generic to the industry, and which have been considered in depth in the working groups and other stakeholder forums. For generic industry issues, we expect to put in place common output definitions and incentive mechanisms as set out in this decision document. However, we expect companies' own engagement process to inform their approach to company specific issues. The level of output delivery (or baselines) for each company is also for companies to decide (bar Health and Safety Executive statutory prescribed safety standards).

2.13. Our overall decisions broadly reflect the outputs and associated incentive mechanisms we consulted on in December. There are no radical changes. However, working with stakeholders, we have refined the output measures and incentive mechanisms since December. Table 1.1 provides a high level summary of our December proposals and March decision by output category. We provide more details in the relevant output chapters in this document.

Reporting requirements

Summary of consultation proposals

2.14. As set out in our December document, we will need to introduce new reporting requirements on companies to enable us to monitor and evaluate companies' performance against the set of output and revenue adjustment measures.

2.15. We have two main reporting processes to enable us to monitor licensee performance for the current price control. We require licensees to submit to us on annual basis regulatory reporting packs (RRPs) which provide a common framework for the collection and provision of accurate cost and revenue information. We also require GDNs to submit data as set out in our Regulatory Instructions and Guidance (RIGs), which provides a common framework for GDNs to report relevant outputs, standards of performance and revenue data to us, and for us to monitor their performance.

2.16. In our December document, we proposed to finalise the RIGs by the end of December 2011, in advance of agreeing price controls with any company that is fast-tracked.

2.17. We also invited respondents' views on whether any of the proposed output measures would present companies with difficulties in terms of submitting accurate and comparable data.

2.18. We also asked whether we should require companies to undertake other measures to provide us with an assurance as to their accuracy of their data submissions, eg appointing an independent reporter.

Respondents' views

2.19. No respondent identified difficulties with reporting accurate and comparable data for any of the proposed output measures. A number of respondents commented that they could not fully respond to this question until the output measures were further refined.

2.20. The respondents noted that we should ensure the proposed output measures fulfil the relevant criteria (ie controllable, auditable, comparable etc.) to ensure the licensees can submit accurate and comparable data. One respondent also asked us to consider the benefits of allowing different tolerances for data reporting, to ensure a proportionate approach to reporting. Another respondent stated that we would need to allow network companies time to capture the data required by the new outputs framework.

2.21. On the question of whether it would be appropriate to require companies to appoint an independent reporter, some respondents saw potential benefit in the introduction of this type of requirement, particularly in providing an assessment of non-financial data. One respondent noted that, unless the reporter were to look at all companies within the sector, an arrangement similar to that currently employed by

Oftwat, this would not give us any comfort that companies are reporting on a consistent basis. Others expressed the view that the current assurance arrangements are fit for purpose.

Our decision

2.22. As set out in December, we will work with the industry to develop and finalise the data reporting arrangements that will accompany the price control settlement. We will initiate a work stream post March to develop the RIGs working in close consultation with the industry. Throughout this process we will look to ensure that the reporting requirements, and the arrangements that are in place to check the accuracy of this information, are both effective and proportionate.

2.23. We have already started to review the arrangements we have in place to ensure the accuracy of data submitted by licensees. The reporting requirements on the GDNs, electricity distribution and transmission operators and the associated assurance requirements have developed over time and we employ a variety of methods to provide assurance that data submitted is accurate. While the existing arrangements in this area have been largely effective in providing comfort on the reliability of regulatory returns, there is scope to introduce a more coherent assurance framework, where greater assurance is required for the areas of highest risk.

2.24. The transition to an outputs focussed regime and the new areas of reporting that this will entail make this an appropriate time to carry out such a review. The decision that follows the completion of this work may involve us introducing additional assurance requirements (discussed briefly below), which would require the licensees to incur additional costs in this area. If the conclusions arising from this work have cost implications, licensees will have the opportunity to reflect this in an update to their business plans.

2.25. We are looking to introduce an approach where the measures to ensure data accuracy are proportionate to the associated risk. As such, the burden and intrusiveness of the approach should reflect the impact misreporting of any particular data category could have on customers (in terms of the outputs they receive or the price they pay for network service) and the incentive companies have to misreport.

2.26. We are considering whether the principle of proportionality should extend beyond the inherent risk associated with individual data submissions and should also take into account an assessment of the internal systems and processes of each licensee. This assessment could include, for example, companies' governance frameworks, the robustness of their systems, past performance in providing accurate data and the introduction of new systems and processes. Under this type of arrangement, certain assurance requirements would apply to all companies, with more stringent requirements applying only to those licensees where there is deemed to be a higher risk of misreporting.

2.27. This review considers, as one option, the benefits of introducing requirements for companies to appoint independent reporters. At this stage, we do not anticipate making a recommendation on the introduction of the type of scheme employed in the

water and sewerage sectors, whereby each company appoints an individual with a joint duty of care to the company and regulator to examine the systems used in preparing the principal annual reporting submissions and to review the company's performance. However, we could see merit in similar but more focussed arrangements with the reporter looking solely at the robustness of regulatory reporting.

2.28. We can also see potential benefits in a system where a reporter would examine a particular category of data reporting across all of the licensees within a sector (for example, network reliability output reporting). This would be particularly relevant where data are used for carrying out comparisons between companies, such as the benchmarking of particular areas of expenditure or in gaining assurance that technical output information is reported accurately, and would enable us to focus on specific aspects of company reporting, for example, where we have introduced a new reporting requirement. Areas under review would change over time, in response to changing priorities or concerns.

2.29. Under the current arrangements, we require certain regulatory submissions, such as the cost and revenue reporting packs, to be accompanied by 'director sign-off' sheets. Other options under consideration are whether to sharpen these arrangements by being more specific on the level of sign off required and by defining more precisely what we expect such a sign off to represent and whether to extend these arrangements to a wider range of submissions.

2.30. Further work will be done on the development of the criteria that could be used in assessing the risk associated with individual companies and on how these assessments will be used to determine the types of assurance activity to be carried out. In particular, we will be looking to get a better understanding of the licensees' systems and processes covering the submission of regulatory data, which would form a significant part of such an assessment. We will also work with the licensees to get a more comprehensive view of the risks associated with different categories of reporting. To this end, we will look to form industry working groups to discuss these issues further. As is currently the case, we expect the compliance requirements to appear across the relevant licence conditions and RIGs documents.

Changes to outputs

December proposals

2.31. In our December document, we proposed a mid-period review of outputs which would allow for changes to the agreed measures only where these were justified by changes in government policy or legislation. We also proposed to allow the introduction of new outputs where these were required to meet the needs of consumers and other network users.

2.32. We also acknowledged that we might need to make changes to output measures where we identify an error in setting the target/baseline output level or the associated incentive rate; and, where the proposed reporting or measurement of an

output is unfit for its intended purpose (eg where we identify scope for gaming on reporting of the figures).

Respondents' views

2.33. Most respondents agreed to our approach to limiting the scope for adjusting outputs at the mid-term review to changes required by legislation or government policy, and to new output measures. We address this issue in greater detail in 'Supplementary Annex - RIIO-T1 and GD1 Business plans, innovation and efficiency incentives'.

2.34. One GDN noted that the outputs package is an essential part of their acceptance of the overall regulatory package, and therefore we should exercise caution in making any changes. Another GDN noted that changes in the output measures in relation to 'unfit measurement' or 'reporting' issues should be picked-up through the development of the regulatory instructions and guidance (RIGs).

December decision

2.35. We confirm our proposal to have a limited scope mid-term review of outputs. We set out our decision in more detail in 'Supplementary Annex - T1 and GD1, Uncertainty mechanisms'. We also confirm our proposal to revise outputs measures outside of this process only where we identify an error, or the measurement/reporting of an output does not meet the intended purpose.

3. Environmental impacts

Chapter summary

The RIIO framework requires companies to reduce their own business carbon footprint (the narrow environmental objective) as well as contribute to meeting GB carbon targets (broader environmental objectives). This chapter sets out the outputs that we will require companies to deliver over the RIIO-GD1 period to achieve these objectives.

Introduction

3.1. The RIIO framework identifies two environmental objectives: to ensure that companies contribute to the wider environmental objectives, eg by maximising the volume of low carbon flows on the network and promoting energy efficiency ('broad measure'), as well as minimise the more 'narrow' environmental impact of their own activities.

3.2. In this chapter, we set out our decision for the set of specific environmental outputs that we consulted on in December. We intend to introduce measures to facilitate the connection of bio-methane, including introducing connection standards for bio-methane producers, and timely provision of information in relation to connections. We will also introduce a discretionary reward scheme (DRS) that will reward companies that deliver outputs that contribute to environmental and social objectives, beyond those financed at the price review. We have also decided to continue with (a modified version of) the shrinkage allowance and environmental emissions incentive (EEI), mechanisms which provide enhanced incentives for companies to reduce network losses. Aside from these specific environmental outputs, we also intend to introduce a number of other output measures that contribute to the environmental objectives but which are classified within other output categories (and therefore addressed in subsequent chapters). These include:

- Network reliability (see Chapter nine). We will improve the current arrangements for companies to engage in demand-side management (or 'interruptible contracts') to meet new load requirements.
- Broader approach to asset management (Chapter ten). We will require companies to introduce a risk-based approach to asset management, where investment is prioritised according to the risk, including environmental risks.
- Customer service and stakeholder engagement incentives (Chapter four). We will introduce a broad measure of customer satisfaction, providing incentives for companies to be responsive to their customers' needs, including bio-methane producers.
- Network Innovation Competition (NIC), ('Supplementary Annex - RIIO-T1 and GD1 Business plans, innovation and efficiency incentives'). We will provide a NIC of £20 million pa for the gas sector to fund the development of technologies relating to the delivery of a low carbon future (see 'Supplementary Annex - RIIO-T1 and GDI Business plans, proportionate treatment, and efficiency incentives').
- Connection standards (see Chapter seven). We intend to introduce connection standards for bio-methane producers.

3.3. Table 3.1 summarises the set of environmental behaviours that we expect to incentivise through our outputs package, the set of corresponding environmental outputs (covered in this Chapter) and other environment-related outputs covered in other output categories (and subsequent Chapters), and the associated incentive mechanism. For all gas distribution companies, we estimate the total value of environmental incentives at around £380m.

Table 3.1: Summary of output measures and policies that contribute to environmental objectives

Behaviours	Output measure or policy instrument	Incentive arrangements
GDNs ensure they are playing their part in achieving a low carbon future	One of the criteria for judging a well justified business plan is the quality of the strategy the company will employ to play a full role in delivering a sustainable energy sector. Companies are also required to engage with stakeholders in determining business plans	GDN may not be fast tracked or subject to proportionate treatment
	Customer stakeholder element of broad measure	Up to + 0.5% of allowed revenues.
	Discretionary reward scheme (DRS) for companies contributing to environmental and social objectives beyond those financed at review	£12m (over period).
GDNs look at new and innovative ways to deliver low carbon and environmental objectives at lower cost to customers	GDNs can include innovative solutions that can be justified within the price control or over a longer period in their business plans	
	Innovation allowance	0.5 – 1% of allowed revenue.
	Network Innovation Competition	£20m p.a.
	Revenue adjustment mechanism to providing financing for innovative solutions emerging from NIS	
GDNs provide good service to renewable gas producers and customers, help bio-methane producers to understand the process and costs of connection and ensure they receive timely and efficient connections	GDNs to produce common, simple, accessible and reliable information to assist entry customers wanting to connect to the network	Licence requirement - potential fine for breach
	Commitment from GDNs to introduce voluntary standards of connections service for gas entry customers	Reputational incentive
	Stakeholder engagement	+ 0.5% of allowed revenue
	Customer satisfaction survey	+/- 0.5% of allowed revenue
	Complaints metric	- 0.5% of allowed revenue
GDNs reduce their business emissions and natural resource use	Shrinkage allowance and environmental emissions incentive	Set equal to commodity price plus environmental value of carbon
	League table of GDNs' annual business carbon footprint	Reputational incentive
	Monitoring of land remediation, use of aggregates and spoil to landfill	Raised awareness
GDNs consider operational and demand side solutions to avoid capital investment	Equalise incentives between opex and capex	
	Option value included in interruptible contracts	

3.4. In this chapter, we first discuss our decisions with regard to the broad environmental measure, including the measures we are proposing to facilitate the connection of bio-methane and non-renewable forms of distributed gas. We then discuss output measures to ensure that companies minimise their own business carbon footprint, in relation to gas lost on the transport network ('shrinkage'), companies' wider business carbon footprint, and emissions and natural resource use.

Broad environmental objective

3.5. In terms of the broader environmental objective, we confirm our intention to create an enabling regulatory framework to ensure that companies play their role in delivering a low carbon energy sector. For the GDNs the most obvious role involves facilitating the connection of renewable gas (ie bio-methane²) plant.

Summary of consultation proposals

3.6. In our December document we proposed to require companies to report the capacity of bio-methane connected on their system as our primary measure for the broad environmental output category. However, we did not consider that this output measure is sufficiently controllable by companies to set an output target or attach a financial penalty/reward. The bio-methane industry is at an early stage of development, and the future role of bio-methane in meeting carbon reduction targets will depend on a number of factors outside companies' control, such as the payments that bio-methane plant will receive under the government's proposed Renewable Heat Incentive (RHI). We proposed publishing an annual league table of bio-methane connected for each of the GDNs, to provide reputational incentives to improve performance.

Summary of responses

3.7. GDNs generally agreed that the capacity of bio-methane connected is a useful measure of the industry's performance towards the achievement of the national emissions targets, but is not sufficiently controllable by the companies to warrant a direct financial incentive. One GDN considered that the measure should include all distributed gas. No other environmental measure was put forward which was sufficiently measurable and controllable by the companies to be financially incentivised on a mechanistic basis. GDNs suggested that they should also be required to report on capacity of bio-methane being considered through enquiries and applications in progress, but not yet connected.

3.8. GDNs argued that since the capacity of bio-methane connected is largely outside of the companies' control, a league table setting out companies' comparative performance would not be appropriate. An alternative suggestion was put forward to publish an annual table showing total capacity connected year-on-year for the

² Biogas is a renewable source of gas produced from the breakdown of organic matter and is produced by a process of anaerobic digestion. Biogas has a variety of applications, but it is predominately used to generate electricity in the UK. To inject the gas into the grid it must first be converted to bio-methane by removing the oxygen. Distributed gas refers to non-renewable sources of gas (such as shale gas), as well as renewable sources (ie bio-methane).

industry as a whole, in order to demonstrate the industry's contribution to meeting the government's carbon abatement targets.

3.9. There were differing opinions regarding associated financial rewards:

- Some GDNs and other respondents considered that stronger financial incentives were required, and proposed retaining the DRS which could be used to reward companies who contribute to the broad environmental objective throughout the price control period
- A number of GDNs, network users and consumer groups considered that there should be no financial reward, including no discretionary reward, citing existing environmental initiatives and lack of controllability.

3.10. In our December documents for RIIO-T1 we consulted on a proposal put forward by RenewableUK. They proposed a financially incentivised output measure based on percentage of renewable generation and/or carbon intensity of energy flowing on the network, with a financial reward only. However respondents did not support the application of this proposal to gas distribution, given the greater uncertainty with regard to the role of gas networks and bio-methane in a low carbon energy sector.

Our decision

3.11. We have decided that we will publish companies' performance for the following measures:

- the total capacity (MW) of bio-methane connected
- the total capacity (MW) of bio-methane enquiries and applications currently in progress but not yet connected.

3.12. We acknowledge that these measures are to a large extent outside of companies' control. However, we consider that it is important to publish companies' performance with regard to these output measures to incentivise companies to do all they can to facilitate the connection of bio-methane to their networks. We will consider the most suitable way to present the data, eg as a percentage of total capacity connected/ total gas flows etc. We intend to publish this data with explanatory text explaining variations in companies' performance, and with suitable caveats with regard to the controllability of these output measures. We will discuss the presentation of this data with the companies prior to publication.

3.13. We also believe that there are benefits to introducing a financial incentive to encourage companies to play their role in facilitating environmental and social objectives (see Chapter six). Therefore, we have decided to revise the DRS established under GDPCR. The DRS will reward companies that can demonstrate that they have delivered additional outputs that contribute to environmental (or social) objectives beyond those funded at the price review. We consider that the DRS will complement the proposed stakeholder engagement element of the broad measure, by providing companies with an incentive to focus specifically on meeting environmental and social objectives (as set out in Chapter four, the stakeholder engagement element of the broader measure is much broader in focus). In terms of

financing, we propose an award issued in three tranches of four million pounds (in years three and six and nine and a final tranche in 2021). We will expect companies to have strong stakeholder evidence/support for the outputs they have delivered in order to qualify for a discretionary reward. We will set out the criteria and process for this DRS in greater detail as part of a separate consultation.

Information provision and connection charging for distributed gas

Introduction

3.14. For companies to play their role in meeting the broader environmental targets, we need to ensure that there are no regulatory barriers to entry for customers seeking to inject gas into the gas distribution network.

3.15. DECC announced on 10 March 2011 details on the level of support available under the Renewable Heat Incentive (RHI) which will come into effect in 2011. The RHI aims to provide long term support for renewable heat technologies in the form of payments to producers for the energy they generate.

3.16. Although there are only two grid connected bio-methane plants in the UK, we considered that the introduction of the RHI could lead to an increase in the use of bio-methane as a renewable energy source. In our December document we invited views on the expected take-up of bio-methane following the introduction of the RHI.

3.17. The December document raised a number of issues related to injecting gas into the distribution network and we recognise there are a broad range of issues to address; broader than those we would normally seek to address within a price control review. We asked for respondents' opinions on the broader issues such as charging arrangements, gas quality and the ownership of equipment.

3.18. We are discussing these issues with a wide range of stakeholders, including through our involvement in Defra's Anaerobic Digestion (AD) Strategy Group. We are also discussing these issues with DECC.

3.19. We will continue to work to identify any potential barriers to bio-methane connection to the grid, and liaise with the appropriate parties to address any barriers identified. We will feed-in the views we have received on gas quality, ownership of equipment and charging arrangements to this work stream. We intend to consult on this set of broader issues later in the year.

3.20. This chapter sets out what companies will need to understand in order to submit their July business plans as part of RIIO-GD1. Therefore within this chapter we focus on the information provision GDNs will need to provide to potential entry customers and funding arrangements for connection charging.

Information provisions

3.21. In our December document we outlined the importance of potential bio-methane developers being able to understand the costs of and process for connecting to the network, and in particular which locations or situations may be more expensive than others.

3.22. We proposed to create a requirement in the licence for the GDNs to provide common, simple, accessible and reliable information to meet the needs of all customers wanting to connect to the network. We also noted that Guaranteed Standards may need to be extended to entry customers so the same standards of customer service apply for entry connections as exit connections. More detail on our decision on Guaranteed Standards can be found in Chapter seven.

Summary of responses

3.23. The majority of respondents welcomed the requirement on GDNs to provide information to customers seeking to inject gas into the grid, particularly on the availability of capacity on the network, nearest connection point, and likely flow rates. One respondent suggested developing a bespoke connection process tailored to the needs of entry customers.

Our decision

3.24. Given that respondents agreed with our proposals, we will develop licence requirements for the GDNs to provide information requirements for different types of entry customers. We will develop the specific requirements in conjunction with the GDNs and potential entrants to ensure they are tailored to the needs of respective entry customers.

Connection and use of system charging

3.25. In our December document we stated that we need to be certain that the current connection and Use of System (UoS) charging arrangements do not create a barrier to entry for customers seeking to inject gas into the gas distribution network. We also stated that we are keen to provide flexibility within the price control to accommodate any potential changes to the current charging arrangements.

3.26. We highlighted the alternative to the current 'deep' connection charging arrangements would be a 'shallowish' connection boundary. This differs to the current arrangements where the full capital costs of connection are charged to the customer connecting. Under a 'shallowish' connection boundary, customers pay a connection fee that includes the cost of any sole use assets and a contribution towards the cost of reinforcing any shared assets. Other network costs (eg operation and maintenance) are then recovered through ongoing UoS charges.

3.27. Moving from a 'deep' to a 'shallowish' connection boundary would mean the connecting customer would no longer pay the full costs of connection up front. A proportion of these costs would need to be recovered from all customers through UoS charges and included in allowed revenues (unlike connection fees which are excluded from allowed revenues).

3.28. As we set out in our December documents, GDNs should review their charging methodologies for entry customers, and propose modifications if there is an objective rationale for doing so. We will consider any charging modifications on their merits. In the event that we were to approve any charging modification, GDNs would need to recover expenditure associated with entry connections (beyond the connection charge) through price control revenues. In our December document we set out two proposals for how GDNs could recover any additional costs they might need to recover through the price control. These were:

- **option 1:** Logging up mechanism with ex post efficiency review
- **option 2:** Pass through with incentive.

3.29. We stated that changes to the current charging modifications might be justified if entry customers provided network benefits. However, we stated that through our working group we were unable to identify any material benefits to the network from injecting gas into the lower pressure tiers. We invited views from respondents with regards to the potential benefits of injecting gas into the gas distribution network.

3.30. We also consulted on whether we should exclude assets required to connect bio-methane from the connection charging arrangements. This would involve the GDN socialising the cost of connection and recovering these costs through UoS charges paid by demand customers. As set out in our December document, we needed to consider whether we had the vires to introduce a cross subsidy through the charging arrangements, and whether such a step could be considered discriminatory.

Summary of responses

3.31. At the time of our consultation, the government had not yet announced the level of subsidy for bio-methane through the RHI and therefore respondents were unsure about the potential for bio-methane during RIIO-GD1. However, since the close of our consultation period, the government has announced the value of subsidy for bio-methane, and both the Anaerobic Digestion and Biogas Association (ADBA) and the GDNs have told us that they expect an increase in connection enquiries and connections.

3.32. Due to the uncertainty around the potential volume of entry connections, some respondents found it difficult to identify the prospective benefits from entry connections. However, some respondents suggested that entry connections would provide benefits in terms of security of supply and by relieving capacity constraints on the National Transmission System (NTS). Some respondents also suggested that injecting gas into the distribution network could bring wider benefits by offsetting the need to reinforce the electricity network to provide peak heating requirements and reducing the use of the upstream network, which may help facilitate carbon capture and storage.

3.33. Some respondents stated that we should socialise some of the costs of connection and cited the cost sharing arrangements in relation to NTS offtake points as an example of how costs could be allocated between the GDN and the entry customer. They suggested bio-methane connection assets should be treated the

same as NTS entry points where the quality and telemetry equipment is owned by the GDNs and the costs are recovered from all customers through general network charges. Some respondents considered that our statutory duties were broad enough to permit us to socialise connection assets.

3.34. In relation to the options around recovering connections expenditure not funded by the connecting customer, respondents considered that a logging up approach (where we recognise costs at the end of the eight year control) could impose cash-flow risks on network companies if entry connections were to increase significantly over the price control period. Most of the respondents therefore preferred option two.

Our decision

3.35. In terms of funding connection costs in the event of a connection charging boundary change, we have decided to use the logging-up mechanism initially (ie option 1). In order to address companies' concerns with regard to potential cash-flow risks, material costs associated with a revised connection charging boundary will be covered by a reopener mechanism.

3.36. As with the reopeners set out in the 'Supplementary Annex – RIIO-T1 and GD1 Uncertainty mechanisms' we will have two reopener windows. The network companies can make submissions to us in both July 2015 and July 2018, with any changes to charges to be introduced in April 2016 and April 2019. If no reopener is triggered costs will continue to be logged-up and assessed at the next price control.

3.37. A reopener can only be triggered by a network company if its efficient logged up costs breach the materiality threshold. The threshold is one per cent of total allowed expenditure once the efficiency incentive rate (from the Information Quality Incentive (IQI)) has been applied.

3.38. If a reopener is triggered we will assess whether there is sufficient information (across all GDNs) on the costs of connection to assess efficient connection costs and to introduce an incentivised cost pass-through mechanism to replace option 1 for all GDNs. If there is not, we will allow the GDN that triggered the reopener to recover the logged up costs, and we will undertake an efficiency review at either the next reopener or at the end of the price control. The other GDNs will continue to log up their connection costs.

3.39. If we judge that we have cost data for a sufficient number of connections to determine the efficient costs of connection we will assess the logged up costs for all GDNs, and we will allow all GDNs to recover our assessment of their efficient costs. We will also introduce an incentivised cost pass-through mechanism to replace option 1 for all GDNs. We will use the costs collected from the logging up mechanism to calibrate the incentive.

3.40. In order for us to introduce an incentivised cost pass through mechanism as soon as we have sufficient cost data, we expect the GDNs to keep detailed records on the costs of connections. The data will be reported in the RIGs. We will work with the GDNs and other stakeholders to establish the de-minimis level and the structure of the future incentive mechanism. We will include the broad structure of the incentivised pass-through mechanism in the licence. We intend to use all costs incurred by companies in undertaking our ex post review of companies' logged up costs.

3.41. As set out above, we will consider any changes to the current charging arrangements for bio-methane, including the socialisation of bio-methane assets, in the context of any UNC charging modifications. In considering any future charging modification, we will need to consider whether we have the vires to introduce any proposed cross-subsidisation, as well as whether it would be discriminatory. As set out in December, we are also currently considering these legal issues prior to any charging modification.

Shrinkage

3.42. Shrinkage refers to gas which is lost from the transportation network. It is the dominant element of companies' business carbon footprint and accounts for more than 0.75 per cent of GB greenhouse gas emissions.³ Shrinkage comprises leakage from pipelines (around 95 per cent of gas losses), theft from the GDN network (approximately three per cent), and own-use gas⁴ (approximately two per cent). Under the Unified Network Code (UNC), GDNs are responsible for purchasing gas to replace the gas lost through shrinkage.⁵

3.43. We have a two part incentive mechanism in place to encourage the GDNs to manage the shrinkage on their networks to efficient levels.

- The shrinkage allowance funds companies for the cost of purchasing set volumes of gas to account for shrinkage and incentivises the companies to reduce the volume of gas lost from the network and have an efficient purchasing strategy to replace this lost gas.
- The Environmental Emissions Incentive (EEI) additionally incentivises the companies to manage gas leakage to the environment, using an incentive rate based on the social value of carbon.

3.44. We also fund the GDN at the price review to replace iron mains, which the GDNs agree with the HSE. One of the key benefits to the repex programme is a reduction in network losses. As set out in Chapter nine, we also require companies to develop a broad approach to asset management, where they optimise their

³ This is calculated using the Government's reported statistics on total greenhouse gas emissions: http://www.decc.gov.uk/assets/decc/Statistics/climate_change/1214-stat-rel-uk-ghg-emissions-2009-final.pdf and volume of shrinkage which GDNs reported in 2008/9.

⁴ Own use gas refers to that used for operational purposes on the GDNs' network. This is predominantly heating water baths to heat gas to prevent pipes from freezing.

⁵ <http://www.gasgovernance.co.uk/sites/default/files/TPD%20Section%20N%20-%20Shrinkage.pdf>

investment programmes based on an assessment of risk across all asset classes, including environmental risk (eg expected carbon abatement). The shrinkage allowance and EEI incentivise the companies to consider initiatives to reduce shrinkage during the price control period, in addition to the investment schemes that we will fund at the price control designed to address environmental risks.

Shrinkage Allowance

3.45. In our December document we proposed to retain the existing shrinkage allowance: the annual cost allowance based on an allowed volume of gas losses (expressed in GWh) multiplied by the day-ahead gas commodity price. The shrinkage allowance provides an incentive for GDNs to outperform the allowed volume of gas shrinkage. If GDNs report shrinkage below the allowed volume, they retain the cost saving. Likewise, if GDNs report shrinkage above the allowed volume, they will incur the cost of purchasing the additional gas. We proposed to continue to set the allowed volumes ex ante, with the cost allowance calculated each year based on the day-ahead commodity price (as opposed to a set forecast commodity price). This ensures that GDNs do not face any material price risks associated with fluctuations in the commodity price of gas.

3.46. We invited respondents' views on whether we should introduce a cap and collar on the potential for over or under recovery on the shrinkage allowance. We highlighted that this may be required due to uncertainty over the HSE review of the repx programme and to mitigate any potential windfall gains or losses from forecasting errors. We also proposed to introduce a licence condition which requires GDNs to ensure that they collect the relevant data to calculate actual shrinkage. This was in order that the companies would be able to use actual shrinkage levels rather than modelled shrinkage as the basis for the incentive mechanisms at future price reviews.

3.47. We also proposed to enable GDNs, where they have provided robust supporting evidence, to amend the assumptions surrounding the volume of gas lost to theft on their network. In addition, we considered measures to ensure GDNs were involved in the identification and reduction of unidentified gas. These included whether to require GDNs to produce and comply with a code of practice outlining the processes they will put in place to locate unregistered sites and recover charges from customers. We also considered requiring GDNs to report annually on the number of unregistered sites they have processed.

Summary of responses

3.48. Respondents agreed with our proposals to retain the existing shrinkage incentive. They commented that this represented a continuation of the current incentive structure and considered that this had worked well in encouraging investments to reduce the largest component of GDNs' carbon footprint. Customer groups commented that we should exercise caution when assessing shrinkage baselines to ensure that GDNs do not reap any windfall gains under the incentives.

3.49. Respondents were less supportive of our proposals to introduce a cap and collar for the shrinkage allowance. They felt that a cap and collar did not appear to be the appropriate mechanism through which to deal with any uncertainty

surrounding the repex programme. Should there be a change in the repex programme, they suggested that it would require the resetting of baselines. Other respondents also commented that it was not clear how a cap and collar would be implemented since the shrinkage allowance is indexed to the day-ahead gas price and the GDNs purchase gas at different times of the year at different prices.

3.50. Respondents also highlighted some concerns with our proposal for a licence condition to collect data to report actual shrinkage. Respondents stated that there is uncertainty in this area since the use of actual data would rely on the roll out of smart meters across GB. Some parties commented that this may not happen until 2020-21. There was agreement over the need to test the feasibility of using actual data but concern that it was too early to place a licence requirement on GDNs to do this. They added that such a requirement would be difficult to comply with and to enforce. Suppliers and customer representatives were more supportive of our proposals and advocated a move to reporting shrinkage performance using actual data as soon as smart meters are rolled out.

3.51. Our proposals on unregistered sites⁶ were met with broad approval from suppliers and customer representatives; one supplier stated that we should go further and introduce a financial incentive on GDNs to process such sites. Other respondents were supportive of setting out the roles and responsibilities of all parties, including GDNs, in this area. However, they highlighted that this work was being taken forward by a working group and that given the interaction with suppliers and shippers, it was not an appropriate obligation to include in a price control.

Our decision

3.52. We will maintain the existing structure of the shrinkage allowance. In forecasting shrinkage volumes over the price control, GDNs should take account of the impact of the repex programme on network losses and any other capital or operational expenditure they have justified in their plan which is predicated on reducing network losses. We will subject companies' baselines to scrutiny as part of our evaluation of business plans and set the allowed annual volumes which the GDNs are funded to purchase (at the day-ahead gas price as published by a reputable market index information provider) to replace the gas lost to shrinkage.

3.53. Under the new equalised incentive arrangements, the difference between the cost allowance for shrinkage and the actual costs of purchasing the gas to cover shrinkage will be subject to the Information Quality Incentive (IQI) efficiency incentive rate. The IQI shares any⁷ over or under spend with customers. As stated earlier the shrinkage allowance encourages the companies to undertake initiatives over and above their funded replacement, in order to further reduce shrinkage. The costs of these initiatives will be subject to the IQI, and therefore shared with customers. For consistency, it is necessary to ensure that any benefit to the companies - ie the difference between the shrinkage allowance and outturn cost - is subject to the IQI.

⁶ At such sites the meter has never been registered and the usage is not recorded in the industry settlement system

⁷ For more information please see the 'Supplementary Annex- RIIO T1 and GD1 Business plans, innovation and efficiency incentives'.

3.54. We will remove the cap and collar from the shrinkage allowance. Having reviewed responses, we agree that this is not a suitable mechanism to deal with any uncertainty over the repex programme. If the HSE review results in a significant change to the repex programme then we will review the shrinkage and leakage baselines (along with cost allowances associated with repex) and re-set baselines where appropriate.

3.55. We remain committed to the use of actual shrinkage data as the basis for reporting shrinkage in RIIO-GD2. We acknowledge respondents' views that there are uncertainties in this area, particularly over the timing of when smart meter data will be available. In response to these views, we intend to modify our proposed licence condition in this area. Rather than introducing a strict licence condition requiring companies to use actual leakage data as the basis for the Environmental Emissions Incentive (EEI) and shrinkage allowance in time for RIIO-GD2, we intend to introduce a licence condition on the GDNs requiring them to report to us (collectively) the following information on a biannual basis:

- the status of the smart meter roll out
- their assessment of the suitability of smart meter data as the basis for the shrinkage data
- the steps they are taking to ensure they have access to these data
- how they intend to use these data (eg re-calibrating their shrinkage model).

3.56. The licence condition will require companies to collectively consult with stakeholders on a draft report which provides an update on progress in the areas above. We would expect responses to this consultation to be published and where appropriate, the final submitted report should address points raised in this consultation. We consider that such a licence condition will enable us to ensure that companies do all they can to have access to the required shrinkage data, and to use these data as the basis for the shrinkage allowance and EEI at RIIO-GD2.

3.57. We are equally committed to ensuring the development of robust processes to reduce the volume of gas not correctly recorded at unregistered sites. All respondents welcomed the proposal to develop such processes. In our December document we noted that this issue was being taken forward by a working group but were concerned that the conclusions of the working group may not place legally binding requirements on GDNs to play their part in processing unregistered sites. We understand that a proposal to modify the UNC to put in place a process for resolving unregistered sites is likely to be raised shortly. We would welcome such a modification and consider that this may constitute an appropriate way forward to deal with unregistered sites. We will continue to monitor the developments in this area. If, following a modification proposal, an acceptable amendment to the UNC does not materialise which places obligations on GDNs to play their appropriate role in processing unregistered sites, we will consider whether it is appropriate to introduce them via a licence condition as part of the price control process. Whether the obligation is introduced via a licence condition or a modification proposal, we expect GDNs to implement the systems and practices required in order to fulfil their role in processing unregistered sites.

3.58. We do not propose to introduce reporting requirements on the number of unregistered sites processed. We consider that, should the obligations to process unregistered sites enter the UNC, then there will already be strong incentives for GDNs to play its appropriate role and strong governance procedures where they do not. We are not proposing any financial incentive in this area since GDNs are not directly in control of the number of unregistered sites which exist in their local distribution zone (LDZ).

3.59. We will maintain the existing licence obligation for GDNs to review their shrinkage model annually. This will include the assumptions used to report the volume of theft on GDNs' networks.

Environmental Emissions Incentive (EEI)

3.60. In the December document we proposed to retain the EEI. This mechanism ensures that GDNs also consider the carbon costs associated with gas leakage (but not the theft or own-use elements of shrinkage) in managing leakage. If GDNs reduce leakage levels below their baseline, under the EEI the GDNs earn a financial reward equal to the environmental benefit associated with the reduction in carbon emissions. Likewise, if the volume of leakage is higher than the baseline, GDNs incur the associated environmental cost.

3.61. We proposed to update the value of the EEI to reflect DECC's latest carbon valuation.⁸ On this basis we proposed that the value of the EEI would rise to around £66 per MWh⁹ on average over the price control period.

3.62. We questioned whether to retain the existing cap and collar on the EEI, and if so whether to maintain it at the current level of ten per cent of the forecast volume of leakage. We also asked whether we should adopt a rolling incentive mechanism for the EEI. This would remove the disincentive to invest in leakage reduction initiatives towards the end of the price control period by enabling the companies to retain the benefit of any leakage reduction for a fixed period, irrespective of when that investment was made. We set out that there were a number of practical difficulties with such an approach, not least in making assumptions around the permanency of any leakage reductions.

Summary of responses

3.63. Respondents welcomed our proposal to retain the EEI and commented that in conjunction with the shrinkage allowance, it had led to a reduction in network leakage. There was less consensus surrounding the need for any cap and collars and if so their level. Respondents noted that caps and collars were introduced at GDNCR

⁸http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/carbon%20valuation/1_20100610131858_e_@@_carbonvalues.pdf
http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/carbon%20valuation/1_20100610131858_e_@@_carbonvalues.pdf

⁹ This is based on the central value of the non traded carbon values. DECC advises that non traded values are used for carbon emissions outside of the EU emissions trading scheme (ETS). The ETS only covers electricity generation and therefore, gas not used for electricity generation is subject to the non traded values.

due to uncertainty surrounding the accuracy of the leakage model but that since the leakage model has now been approved by Ofgem¹⁰, they considered that this uncertainty had been removed.

3.64. One respondent commented that the cap should be removed but that a collar should be retained to protect companies from sharp penalties resulting from exceptional weather events. Other respondents disagreed and commented that a volume based cap and collar is required due to continued uncertainty. The remaining respondents favoured broadening the current cap and collar, one stating that they should be raised to 20 per cent of the forecast volumes of leakage.

3.65. There were also mixed views on the need for a rolling incentive mechanism. Two GDNs agreed that it would be difficult to establish a rolling incentive and that one should not be introduced. One GDN proposed amendments to the leakage model in order to recognise future investments. The other two GDNs stated that, whilst difficult, a rolling incentive should be introduced. They stated that the RIIO-GD1 environmental working group should look to devise a methodology and that the mid period review could be used to review this methodology.

Our decision

3.66. We will retain the structure of the EEI and increase its value in line with DECC's non traded cost of carbon. This will result in the following incentive values for each year of RIIO GD1.

Table 3.2: Environmental emissions incentive values (pre-tax, 2009 prices)

Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
£ per MWh	62.73	63.66	64.59	65.54	66.55	67.50	68.53	69.61

3.67. We expect GDNs to submit their forecast baselines for leakage (in GWh) alongside those for shrinkage in their business plans. For every MWh under or over the agreed baseline, GDNs will earn a reward or penalty to the value of those set out in Table 3.2. These values will be updated for inflation.

3.68. We note that the investment companies attempt to reduce leakage under the EEI is subject to the IQI, and therefore a proportion of the cost is shared with customers. For consistency, we also need to ensure that the benefits of the EEI that accrue to companies are also subject to the IQI, and therefore we intend to reduce the EEI values set out above by the company specific IQI incentive rate. This ensures that GDNs face the correct incentives to manage leakage to the socially optimal level.

3.69. We have decided to remove the cap and collar on the EEI, as caps and collars can blunt companies' incentives to reduce leakage to the socially optimal level. We

¹⁰[http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=NGGD_LM_Approval_161109.pdf&refer=Net works/GasDistr/GDPCR7-13](http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=NGGD_LM_Approval_161109.pdf&refer=Net%20works/GasDistr/GDPCR7-13)

disagree with the suggestion that a collar should remain in place to protect companies against exceptional weather events. We consider that there should be symmetrical incentives which place equal rewards and penalties on companies. This ensures that customers and companies have equal exposure under the incentive.

3.70. We intend to introduce a rolling incentive mechanism for the EEI. We consider that this further strengthens the incentives around leakage reduction and will enable GDNs to include benefits which accrue beyond RIIO-GD1 when making their investment decisions. We are aware that the electricity distribution losses incentive includes a rolling mechanism for precisely these reasons and we see no reason why the same principles should not also apply in gas distribution. We will work with GDNs to develop the specific design of the rolling mechanism and will set this out in due course.

Business Carbon Footprint (BCF) excluding shrinkage

Summary of consultation proposals

3.71. In our December document we set out that the main elements of GDNs' BCF relate to building energy usage, operational and business transport, fuel combustion, fugitive emissions¹¹ and distribution network losses or shrinkage.

3.72. We did not propose to introduce a financial incentive for companies' BCF (excluding the incentive proposed in relation to shrinkage) but rather to rely on reputational incentives.

3.73. We proposed that GDNs report annually their CO₂ equivalent emissions. We also proposed to publish an annual league table showing reduction of emissions to provide reputational incentives for companies to reduce their emission levels. The league table would exclude emissions associated with shrinkage as these are addressed by the shrinkage allowance and EEI mechanisms (as discussed above).

3.74. We proposed to work with the industry to develop a standard framework for reporting BCF, drawing on the existing CO₂ reporting frameworks.

3.75. We also proposed to require companies, as part of their business plan submissions, to identify cost-beneficial schemes that reduce their BCF, and that we would fund schemes which were well-justified. We proposed to hold companies to account for the expected carbon abatement associated with these schemes by undertaking a review of the companies' performance against the expected outputs (in terms of CO₂ reductions).

Summary of responses

3.76. GDNs and other respondents were broadly supportive of the proposals although one GDN contested the scope and materiality of existing incentives. Respondents noted that the reporting requirements they would need to put in place to ensure that

¹¹ Fugitive emissions refer to pollutants released into the air from leaks in equipment.

we did not duplicate existing incentive mechanisms would be onerous, and that they agreed with our proposal not to apply financial incentives. One network company suggested extending the EEI mechanism to cover BCF, once consistent reporting of the BCF was established.

3.77. GDNs and network users supported the proposal to fund well-justified schemes, although caution was expressed by one network user on the value for money criterion to be used.

3.78. GDNs and some network users supported the reputational incentive through the use of a league table, although one network user expressed a dissenting view that only financial incentives would influence carbon reduction. Network companies highlighted that the league table would need to factor in trends of reducing carbon footprint over the past few years (ie different starting points) in order to provide a fair reputational incentive.

Our decision

3.79. As set out in our December document, we do not intend to introduce a financially incentivised BCF output measure to avoid duplicating existing mechanisms. However, we will require GDNs to report annually on their CO₂ equivalent emissions, using a standard framework for reporting BCF which we will develop with the industry.

3.80. We will require GDNs to report the carbon emissions related to their business operation in a standard template according to set categories including (but not limited to) building energy usage, operational and business transport, fuel combustion and shrinkage. We will allow flexibility with respect to the start of the reporting period in order to enable GDNs to align the BCF annual reporting with any existing internal reporting they undertake. This will minimise any administrative costs¹².

3.81. GDNs will be expected to report on all Scope 1 and Scope 2 emissions¹³ on an operational control basis, ie those operations where the GDN has full authority to introduce and implement its operating policy. They will also be expected to report on an identified subset of Scope 3 emissions (eg business travel and external contractors) to ensure that reporting captures all the emissions arising from the development and operation of their distribution system, regardless of the legal entity carrying out each activity.

¹² In line with the decision made on BCF reporting in the DPCR5 Final Decision (http://sharepoint/Networks/ElecDistrib/DPCR5_Lib/Con_docs/Final_Proposals/FP_2_Incentives%20and%20Obligations%20FINAL.pdf) we do not consider that different annual reporting periods between the GDNs will impair the value of the reporting.

¹³ Scope 1 is direct Green House Gas emissions that occur from sources that are owned and controlled by the company. Scope 2 is indirect GHG emissions from the generation of purchased electricity consumed by the company. Scope 3 includes other indirect GHG emissions that result from the activities of the company, but are not owned or controlled by the company. See the GHG Protocol guidance for further details <http://www.ghgprotocol.org/standards/corporate-standard>

3.82. GDNs will have the opportunity to identify cost-beneficial schemes that reduce their BCF in their business plans, and we will fund schemes which are well-justified. The forecast carbon reduction from these funded projects will be subtracted from the company's annual BCF reduction to ensure that the company is incentivised to implement the projects as justified in their business plan, through the reputational incentive. We will publish an annual league table of CO2 equivalent emissions reductions over RIIO-GD1 based on an agreed starting level. The league table will exclude emissions associated with shrinkage as these are addressed by the shrinkage allowance and EEI mechanisms. The forecast carbon reduction from funded projects planned but not undertaken will be subtracted from the annual BCF reported reduction to provide further reputational incentive through the league table.

3.83. To ensure that any recent actions to reduce Green House Gas (GHG) emissions undertaken by a GDN do not disadvantage it by causing it to be measured against a lower base, we will consider making adjustments to a GDN's starting position provided the GDN can submit an objective demonstration that their actions resulted in a material reduction of emissions.

3.84. The reporting framework will set out the methodology to establish the base level and will be detailed in the RIGs.

Other emissions and natural resource use

Summary of consultation proposals

3.85. In our December document we consulted on proposals that the companies should report performance for land remediation, extraction of aggregates, spoil to landfill and emissions to water. Companies would report their performance against baselines included in their business plans. We did not propose attaching financial rewards or penalties to companies' emissions or resource use, although we proposed publishing a league table of performance.

3.86. We proposed to require companies to set out in their business plans a forecast for the expected number of sites to be remediated, by different categories, and we stated that we would compare the business plan baseline with the annual returns to ensure that companies have remediated the sites for which they were funded.

3.87. We also proposed to require GDNs to include the expected costs of aggregate extraction (including the aggregate tax) and spoil to landfill (including the landfill tax) within their business plans, as well as the expected volumes of both. We proposed that GDNs would report performance against these volume baselines in their annual regulatory returns.

3.88. In addition, we proposed that GDNs should be required to report annually on the following elements relating to water emissions:

- number of environmental permits obtained (and the consents)

- number of incidence reports/infringements, ie where they have discharged beyond their consents.

Summary of responses

3.89. One GDN and a consumer group explicitly agreed that there should be no financial rewards/penalties associated with these measures, while one GDN would welcome incentives to fund investment in schemes to reduce other emissions and resource use. Another GDN believed a discretionary reward scheme should be introduced to cover resource use, while one network user did not believe a reputational incentive would achieve the desired results.

3.90. All GDNs disagreed with the proposal to report specifically on emissions to water, citing regional differences in legislation. An alternate proposal was put forward to report on company compliance with ISO 14001 which would cover emissions to water as well as a range of other environmental incentives.

Our decision

3.91. We will require GDNs to set out in their business plans a forecast for the expected number of land remediation sites for each of the following categories:

- those sites requiring routine monitoring and containment against statutory obligations
- additional sites remediated to low risk (but not a statutory obligation).

3.92. We will also require GDNs to report annually on the number of sites remediated for each of the above two categories, as well as the number of additional land remediation sites not funded within the business plan cost allowances but undertaken in response to stakeholder requests or for commercial reasons (eg for land sales).

3.93. We will require the GDNs to submit the expected volumes of aggregate extraction and spoil to landfill as part of their business plans, and then to report on the actual quantity of aggregates used and the annual tonnes of spoil to landfill in their annual regulatory return.

3.94. We agreed with the representation of the GDNs regarding reporting on emissions to water, since the differing regional legislation makes comparison between GDNs difficult. We agree that the ISO 14001 reporting provides a more robust level of environmental compliance.

3.95. GDNs will be required to report annually on the number of non-conformities identified in their annual ISO 14001 independent audit process, giving details of any major non-conformance.

4. Customer service

Chapter Summary

In our December consultation on RIIO Strategy we set out a proposed framework for incentivising companies to be responsive to customers' needs. This chapter provides an outline of our proposals, summarises the responses we received and sets out our final decisions.

Summary of consultation proposals

Customer satisfaction

4.1. In our December consultation we proposed to design a customer satisfaction survey that would capture customers who have experienced:

- a planned interruption to service
- an unplanned interruption to service
- sought a connection (including Independent Connection Providers (ICPs)/Independent Gas Transporters (IGTs))
- contacted the network company via the emergency telephone line.

4.2. We proposed to calculate an overall performance measure based on an aggregate of the score awarded for each of the above categories.

4.3. We proposed to set a financial incentive of +/- 0.5 per cent of annual allowed revenues for performance against this element of the broad measure. The rewards and penalties would be based on a network's performance relative to the industry mean, with a dead-band (where we impose no penalty/reward) around the mean performance.

Complaints handling

4.4. We proposed to introduce a complaints metric to encourage GDNs to manage customer complaints efficiently and resolve them to the satisfaction of the customer. The network companies would be required to report performance against the following categories:

- percentage of complaints unresolved after one working day of receipt
- percentage of complaints unresolved after 31 working days of receipt
- percentage of repeat complaints
- percentage of Energy Ombudsman findings against the GDN.

4.5. We proposed to attach a financial penalty to this measure of up to - 0.5 per cent of annual allowed revenues. We would calculate a composite score based on each GDN's performance against each element. We would introduce a dead-band such that companies in the upper quartile of industry performance would not face a

penalty. A penalty would be applied on a sliding scale relative to the upper quartile performance. We proposed to trial this approach during 2011.

4.6. In introducing this new measure, we also proposed to retain the existing guaranteed standards for complaints handling which compensate customers directly for poor performance.

Stakeholder engagement

4.7. Our proposed mechanism would reward companies that demonstrate a genuine commitment to stakeholder engagement and can show how they have responded to stakeholder views, for example in their business plans and operational strategies.

4.8. We proposed to attach a financial incentive that would provide a reward up to a maximum + 0.5 per cent of annual allowed revenues. The allocation and level of the reward would be determined by an independent panel.

4.9. With the introduction of the stakeholder engagement element of the broad measure, we invited views as to whether or not we should continue with the existing Discretionary Reward Scheme (DRS). We recognised that the DRS could still serve as a mechanism for incentivising behaviours in relation to specific activities, eg environmental and social objectives.

Summary of proposed financial rewards/penalties

4.10. Table 4.1 summarises our proposed financial penalty and reward associated with each element of the broad measure.

Table 4.1: Broad measure proposed financial rewards and penalties

Component	Base demand revenue (%)	Application of penalty/reward
Customer satisfaction survey	+0.5/-0.5	Penalty/reward based on comparative performance, with dead-band based on acceptable range of performance relative to mean
Complaints metric	-0.5	Penalty set on a sliding scale relative to upper-quartile company, with dead-band above upper-quartile
Stakeholder engagement	+0.5	Reward based on qualitative assessment of companies' by independent panel

Summary of responses

4.11. Respondents were generally supportive of our proposals for a broad measure of customer satisfaction. We set out respondents' views on the three elements of the broad measure below.

Customer satisfaction

4.12. In terms of who would be captured by the customer satisfaction survey, the GDNs supported the inclusion of customers seeking a connection and those who had experienced a planned or unplanned interruption. As the emergency telephone line is provided by National Grid (NG) on behalf of all network operators, respondents considered that it would not be appropriate to include this service within the incentive mechanism.

4.13. No views were expressed on the appropriate weightings to be applied to the different customer groups captured by the survey. Subsequent to the consultation, one network company suggested that the relative weightings could reflect the proportion of complaints that are received from the different customer types.

4.14. Other respondents highlighted that all users of the gas distribution networks should be included in the survey. GDNs were reluctant to include shippers, suppliers, IGTs and ICPs within the sample. Customers who had specifically raised a complaint were identified as a potential group for separate coverage in the survey.

4.15. NG highlighted a concern that their ownership of four of the eight networks effectively provided little opportunity for them to outperform the industry average. They stated that their incentives would be blunted to improve their networks' performance as they constitute a significant element of the industry average, against which their performance would be assessed.

4.16. Other responses from GDNs recommended additional questions relating to site tidiness and quality of reinstatement to be included in the questionnaire, to reflect the range of interactions between networks and each individual consumer. GDNs suggested that an overall measure of satisfaction could be derived by taking an average of the score for a number of individual questions instead of asking a single question regarding customers' overall level of satisfaction.

4.17. The GDNs did not support our proposal to assess customer satisfaction based on their annual performance relative to other companies (ie a comparative approach). In further discussions with the GDNs, they proposed an alternative approach that would set a fixed target for customer satisfaction based upon the industry average score at 2010-11. The GDN proposal also had the following features:

- a reward for companies that are higher than the industry average and penalties for those that are lower
- a dead-band set at +/- 0.5 standard deviation from industry mean

- an incentive rate set to achieve full upside/downside potential at two standard deviations from the industry mean.

Complaints handling

4.18. NG expressed a concern that our proposal to impose a penalty on networks outside the upper quartile of industry performance would automatically result in a penalty for two of the four networks owned by NG.

4.19. The GDNs supported introducing a reward element to the financial incentive for companies that outperformed a defined target level. Other respondents supported our approach of having a penalty-only incentive scheme.

4.20. One GDN proposed an alternative mechanism for monitoring performance that took account of the actual number of complaints for each network, how this number had increased or decreased over time, as well as a metric for speed of resolution.

4.21. Another GDN proposed setting a complaint handling target for RIIO-GD1 based upon existing levels of performance. Under this approach penalties would be applied for performance that fell below this target. The relative performance of other networks would not be a factor in determining whether or not they would incur a penalty.

4.22. There was general support for our proposal to retain the existing guaranteed standards relating to complaint handling alongside the complaints handling element of the broad measure. GDNs proposed that we assess their effectiveness in resolving complaints by measuring performance against the same timescales associated with the guaranteed standards, even though these relate to speed of response and not the speed of resolution.

4.23. Respondents also expressed a concern over the use of percentages in the complaints metric where the number of observations was small, such as the proportion of Ombudsman findings against the GDN. Respondents were concerned that if overall complaint volumes reduced, a small but constant number of unresolved complaints would indicate a higher rate of failure.

4.24. In discussions that followed the consultation period, the GDNs proposed an alternative mechanism for handling complaints. This proposal had the following key features:

- the number of complaints would be normalised to take account of year on year changes in volume
- the industry average for 2011-12 would be used to fix the penalty point for the duration of RIIO-GD1
- set a proposed dead-band of 0.5 standard deviations, performance within which would result in no penalty
- apply the maximum level of penalty to networks that perform at two standard deviations below the industry mean.

Stakeholder engagement

4.25. There was support for a mechanism to incentivise for GDNs to engage with stakeholders and reflect the results of the engagement process in their business plans.

4.26. Some GDNs expressed concern over how we would assess performance in this area. They felt that the assessment of companies' performance should be based on a detailed understanding of each network's approach and, where possible, this should be a quantitative assessment.

4.27. A non-GDN respondent considered that the stakeholder engagement mechanism should also incorporate a penalty for poorly performing companies.

4.28. Subsequent to the initial strategy consultation, NG proposed an alternative stakeholder engagement mechanism. Their approach for a measure of stakeholder engagement involves three key elements:

- survey amongst shippers
- survey amongst other stakeholders
- direct measurement of the number/value of policy changes and new products or services introduced following stakeholder engagement

4.29. NG considered that their approach would provide a more objective method of measuring companies' stakeholder engagement than an assessment by an independent panel.

4.30. There was broad support for maintaining the existing discretionary reward scheme alongside the stakeholder engagement element of the broad measure.

Summary of proposed financial rewards/penalties

4.31. Some of the GDNs expressed a view that the proposals did not provide a sufficiently strong incentive for companies to improve performance from their relatively high starting levels. One GDN proposed to double the rewards/penalties to +/- two per cent of revenue. Other respondents considered that overall the structure of the incentive exposed GDNs to greater downside than upside risk.

4.32. Network companies expressed the view that we should have sufficient information to determine the size of the dead-band for customer satisfaction and the penalty scale for complaints handling (relative to upper quartile performance) in our March document.

Our decision

4.33. As set out above, in general respondents agreed with our proposed broad measure of customer satisfaction, and we will therefore introduce this measure for RIIO-GD1. Below, we describe our decisions in relation to the three elements of the

broad measure - a customer satisfaction survey, complaints metric and stakeholder engagement - in more detail.

Customer satisfaction

4.34. The survey will be conducted amongst customers who have:

- experienced a planned interruption to service
- experienced an unplanned interruption to service
- sought a connection (including ICPs/IGTs).

4.35. In response to the views expressed by GDNs, we do not propose to include customer satisfaction scores associated with the emergency telephone line within the GDN's overall performance score. This service is provided by NG on behalf of all GDNs, and the service provided is common for all GDNs. However, we will require NG to report on the customer satisfaction scores in this area in order to ensure current service levels are maintained or improved.

4.36. We believe that the experiences of other stakeholders (such as shippers and local authorities) are better addressed through other elements of the broad measure. The experience of complainants for instance, will be captured through our assessment of how effectively complaints are resolved. Similarly we expect that in setting out their stakeholder engagement activities, each network will demonstrate how they have engaged with a wider group of stakeholders than just the end users captured in the satisfaction survey. We expect that shippers and suppliers will be amongst the key stakeholder groups targeted by each GDN.

4.37. The survey will capture different aspects of the service provided by GDNs from initial contact through to resolution of the issue. The GDN's performance will be determined from an aggregate of the overall satisfaction score awarded by customers in each of the categories set out at paragraph 4.34.

4.38. The survey will be conducted throughout the year with performance rewards and penalties determined annually.

4.39. We do not consider that the responses to our December consultation provided strong evidence to change our December proposals with regard to the size of the reward/penalty. We consider the size of the financial incentive is high compared to the likely costs of improving performance. We also consider that setting each company the same target is correct given that we will allow the same level of funding for customer service outputs in setting allowed revenues, and companies should therefore deliver comparable service levels.

4.40. The December consultation highlighted concerns over the ability for companies owning multiple networks to outperform the industry mean. We recognise that this could dampen the incentive for these companies to improve performance.

4.41. We have considered the alternative approach put forward by the GDNs and believe that there may be benefit in setting a fixed target for the duration of RIIO-

GD1. We believe this approach would help network companies set themselves measurable objectives in order to identify and appraise customer service initiatives. We also recognise that this approach would help to avoid any general degradation in service quality across the networks.

4.42. We do not consider however that this target should be based upon the industry average for 2010-11. We believe this would provide an insufficient incentive to improve for those networks currently performing on or above the average. We also have concerns with the use of 2010-11 as a basis for setting targets (see paragraph 4.46 below).

4.43. We therefore intend to set a fixed customer satisfaction performance target for the duration of RIIO-GD1, based upon the upper quartile performance of network companies. The upper quartile performance level will be drawn from survey data captured in 2011-12.

4.44. We will set the financial penalty/reward equal to +/- 0.5 per cent of companies' allowed revenues relative to this performance target.

4.45. Under this approach there will be no dead-band around the target level. Companies that perform above the designated point will receive a reward, those that fall below it will be penalised. We recognise however that a network whose performance is only marginally outside of this target should not receive the same level of penalty or reward as a network where performance is significantly better or worse. To address this, we will apply a sliding scale to the level of penalty and reward so that the maximum financial impact is only realised by networks that perform at a designated level beyond the target.

4.46. We recognise that the existing survey that was introduced as part of GDPCR provides a considerable body of information relating to current levels of customer satisfaction. We have considered using this data to establish the size of the dead-band. We are conscious however that the further work we will undertake to develop the customer survey may result in changes to the survey and accompanying methodology. These changes may undermine the use of the current data set to establish the range of the dead-band going forward. We therefore propose to develop and trial the survey in 2011-12 before establishing the size of the dead-band. We will also use data from this trial to establish the distance from the target level where the maximum penalty or reward will be applied.

4.47. To support us in this, we will appoint a market research agency to develop and pilot the questionnaire and survey methodology. This work will identify:

- the survey questions, including how best to capture overall levels of satisfaction
- the most appropriate survey methodology, including the potential use of telephone interviews.

4.48. Using existing data and information emerging from the above survey development, we will identify the relative weight to be assigned to each of the customer categories (ie those experiencing a planned interruption, those

experiencing an unplanned interruption and those seeking a connection). We will consult on this before April 2012.

4.49. The costs of conducting the survey will be shared across the industry. Ofgem will provide a proportion of funding towards the pilot that will be run in 2011-12. Following the introduction of the final survey in April 2013, we intend that GDNs will collectively fund and run the survey subject to a survey design that we specify.

Complaints handling

4.50. We will introduce a measure assessing how effective network companies are in managing complaints. GDNs will be required to report performance against the following categories:

- percentage of complaints unresolved after one working day of receipt
- percentage of complaints unresolved after 31 working days of receipt
- percentage of repeat complaints
- percentage of ombudsman findings against the GDN.

4.51. We will attach a financial penalty to this measure of -0.5 per cent of annual allowed revenues. A composite score will be calculated based on each GDN's performance against each element.

4.52. We have taken into consideration the proposals by GDNs to introduce a reward element to this incentive. We feel that incentives already exist to reward those companies that effectively address complaints. This may be through the customer satisfaction or stakeholder engagement elements of the broad measure. There may also be operational benefits that can be derived from reducing the time and resource spent managing complaints.

4.53. We have taken into consideration the alternative proposal put forward by the GDNs. We believe that there is some merit in setting a fixed target for complaint handling at the start of the price control for the duration of RIIO-GD1. We recognise that this approach would allow companies the opportunity to set themselves targets for initiatives that could improve their approach to complaint handling. We also appreciate that this approach would ensure that NG, who owns four of the eight GDN networks, would not face automatically face a penalty (as it would if the benchmark were set based on the industry performance within the year).

4.54. We do not consider however that this target should be based upon the industry average for 2011-12. We believe this would provide an insufficient incentive to improve for those networks currently performing on or above the average. Also, we do not agree that a dead-band should be set below this average exempting any networks with performance in this band from penalty. A consequence of this approach could result in complaints being handled, on average, in a less effective manner than at present.

4.55. We therefore intend to set a fixed performance target complaint handling for the duration of RIIO-GD1, based upon the upper quartile performance of network

companies. The upper quartile performance level will be drawn from trial data captured in 2011-12.

4.56. There will be a dead-band such that companies in the upper quartile of industry performance will not face a penalty. A penalty will be applied on a sliding scale relative to the upper quartile performance, and the maximum penalty will only apply to companies whose performance falls below a minimum acceptable level. If the performance of all companies' is above this minimum, no company will face the maximum penalty.

4.57. We have elected to maintain the proposed composition of the complaints metric. We note however the preference from GDNs to adopt the timescales that apply in the guaranteed standards to the speed of responding to a complaint. In making our decision we consider that there is a clear justification for adopting different timescales for the complaints metric included in the broad measure against those incorporated in the guaranteed standards. The complaints metric relates to the time companies take to resolve complaints, including the completion of any remedial actions. We feel it is reasonable to assume that there will be circumstances where this could be expected to be longer than the time taken to respond to a complaint.

4.58. We note concerns raised over the application of a percentage measure to a potentially low number of complaints, particularly those that are referred to the Ombudsman. We believe that even against a low number the proportion of complaints that are upheld by the Ombudsman is an important measure. We also believe that network companies have a measure of control over their performance in this regard. On this basis we do not believe that the use of a percentage as a measure of performance unfairly increases a network's exposure to a penalty. We note however the networks have put together a proposal to 'normalise' percentage levels, to take account of shifting volumes of complaints. This may provide a mechanism to offset some of the concerns raised with basing percentages upon low sample sizes.

4.59. As with the customer satisfaction element, we will need to undertake further work to develop this incentive. As GDNs currently only record their speed of response to (not resolution of) complaints, we propose a trial reporting period to assess current levels of performance against these categories.

4.60. We will use the trial to be conducted during 2011 to assess the appropriate weighting to be applied to each of the four categories of complaints handling. We will also use the emerging data to identify the level of performance at or below which we will impose the maximum penalty. We will also use this trial period to assess the potential benefits that may arise from utilising the mechanism for 'normalising' percentage scores, as proposed by the GDNs.

Stakeholder engagement

4.61. Within the broad measure of customer satisfaction, there will be a mechanism to reward companies that can demonstrate their engagement activities have led to exceptionally positive outcomes for customers over the price control period.

4.62. We do not believe that it is possible to specify the activities and outputs that will be associated with stakeholder engagement. Nor are we looking to reward companies in line with inputs (eg number of stakeholder workshops or other exercises they have conducted). For this reason, the assessment of companies' performance has to incorporate a degree of judgement and qualitative appraisal. As a consequence we do not believe that it is appropriate to introduce a financial penalty for companies that perform less well in this assessment.

4.63. We expect that the assessment of stakeholder engagement will highlight those network companies that are delivering best practice in this area. In turn we will expect to see these activities to be subsequently adopted by other network companies. Although at this stage we are not able to establish a minimum baseline of performance in relation to stakeholder engagement we may choose to introduce related licence conditions at future price control reviews. This will be to require companies to start implementing identified areas of best practice where we find they have consistently performed poorly in relation to stakeholder engagement.

4.64. We will attach a discretionary financial incentive to performance in this area under a reward worth up to 0.5 per cent of each network company's annual allowed revenues. The size of this reward reflects the importance we place on networks being able to anticipate and respond to the needs of stakeholders throughout RIIO-GD1.

4.65. In assessing GDNs' performance we will focus on the outcomes achieved rather than the engagement process itself. We will set minimum requirements that GDNs must meet before being considered for a reward. These will include:

- the GDN has identified their stakeholders and has a clearly defined strategy for how they engage with them
- a range of stakeholders have been engaged and have commented on the approach taken by the GDN to capture their views and on the changes that the GDN is making in response
- the GDN is adapting its processes and policies in response to feedback from stakeholders.

4.66. We propose to work with industry to develop our thinking towards the most appropriate method of assessing performance in this regard and to consider details of how the process will work. We will also draw on the lessons learnt from the stakeholder engagement element of the broad measure for electricity distribution companies which will be developed in 2011 and 2012.

Discretionary Reward Scheme (DRS)

4.67. We believe that we should continue with the existing DRS to provide a reward for companies that deliver additional environmental and social outputs not funded at the price review. The DRS will provide a specific incentive to focus on environmental and social issues, and will complement the stakeholder engagement incentive (which rewards companies for wider stakeholder engagement). With regard to social objectives, this may include for instance, rewarding GDNs for working with other players in the sector (electricity distributors, suppliers, technology providers) to facilitate sustainable energy solutions to the fuel poor.

4.68. We provide more detail on our approach towards the DRS in Chapter three.

5. xoserve

Chapter summary

This chapter summarises our timetable for the review of xoserve that will take place in parallel with the price review process.

Introduction

5.1. We will undertake a review of xoserve funding and governance arrangements in tandem with the price review. We will commission an independent report on xoserve which will form the basis of our consultation in the summer. Conclusions will be made in the autumn of 2011.

Summary of consultation proposals

5.2. The industry relies upon the GDNs and National Grid Gas (NGG) National Transmission System (NTS) (collectively known as the Gas Transporters (GTs)) to provide wider data services such as billing shippers for use of the transportation network, managing the booking of capacity on the gas distribution network, running the industry settlement systems and managing the change of supplier process. Following the sale of the four distribution networks by National Grid in 2005, an agency was needed to provide common system and service interface between multiple network transporters and the industry, mainly shippers and suppliers.

5.3. xoserve fulfils the role of the agency on behalf of the GTs in accordance with the terms of the Agency Services Agreement (ASA). The ASA details the services to be provided by xoserve and the service standards to be achieved. It also sets out the arrangements by which xoserve charges for its services. GTs pay these charges using price control revenues.

5.4. We proposed to review the funding and governance arrangements for xoserve. This included a review of the funding mechanism that was introduced at the last price control called 'User Pays'. We also stated we were keen to look at the governance and funding arrangements to assess whether they are appropriate given xoserve's role in major industry change programmes. We identified these as: the roll out of Smart Metering Implementation Programme, Project Nexus (a project looking at the nature and scope of the services required from xoserve and the data processes and systems that will be needed in the future) and support for IGTs.

5.5. We proposed to take account of the industry led review of xoserve that is currently underway. We also stated that we intended to draw on lessons from other sectors and will consider alternatives to the current funding, governance and ownership arrangements within our review.

Summary of responses

5.6. Respondents supported our proposed scope for a review of xoserve. A review was seen as pertinent given the uncertainty and challenges from Smart Metering, which suggest that changes will be needed for an efficient service to continue. The respondents generally supported the timing of the review, although one network

company suggested that a review should not start until summer 2011 at the earliest, when there will be greater clarity on the role of the Data Communications Company (DCC), and the respective services provided by the DCC and xoserve.

5.7. Stakeholders noted they expect xoserve to be able to deliver the requirements for the Smart Metering Implementation Programme and Project Nexus. Respondents considered that support from DECC, Ofgem and the wider industry was important.

5.8. In relation to the future governance and ownership structure of xoserve, one respondent suggested that xoserve's services and systems should be subject to competitive tendering. One respondent suggested adopting a model similar to Gemserv which allows suppliers a level of influence and control. Other respondents suggested that xoserve's funding arrangements should be separated out from the GDNs' price controls and instead funded directly by network users, with xoserve owned and governed by the wider industry.

Our decision

5.9. Our review of xoserve will reflect the scope we outlined in December. We note the recommendation that our review should not start until the summer. However, we consider that we will have sufficient sight of the proposals for the DCC by the spring following DECC's proposed 'Smart Metering Implementation Programme: Response to Prospectus Consultation' publication. We therefore expect to commission an independent study in April, and for the study to be complete in June. The independent study will form the basis of our consultation which we expect to publish in the summer, with a decision on the arrangements for xoserve in autumn 2011.

6. Social obligations

Chapter Summary

This chapter sets out the approach we will take to addressing two key social issues. One is associated with the provision of network extensions for fuel poor customers that are currently off the gas grid. The other relates to network company activities associated with addressing carbon monoxide (CO) related risks.

Fuel poor network extensions

Summary of consultation proposals

6.1. The fuel poor network extensions scheme provides assistance to vulnerable customers connecting to the gas distribution network. It does this by providing funding to GDNs to connect vulnerable customers for customers who are off the gas grid.

6.2. In our December documents we set out how the scheme had performed to date, and our thoughts on its future. We signalled that we continue to believe that it is an important social obligation and one that should be reflected in our proposals for RIIO-GD1. However, we stated that we planned to keep the scheme under review to ensure that gas network extensions constituted the least cost solution to providing energy for fuel poor households, particularly in the light of the government's support for renewable heat (RHI).

6.3. In order to ensure the scheme is still an appropriate method of assisting vulnerable customers over the price control period for RIIO-GD1, we proposed to:

- in conjunction with all relevant parties collectively review the scheme in 2014 to assess whether it is still the cheapest method of assisting vulnerable customers
- require the GDNs to provide information on the costs and benefits of the scheme (eg the costs of connection, and the savings in terms of lower energy bills and carbon abatement) to enable us to undertake a cost-benefit analysis
- switch from an ex post to an ex ante funding approach to both simplify the funding arrangements and provide greater certainty on the scope of the scheme.

6.4. We set out the following options for the funding mechanism:

- **Option 1:** An approach where the GDNs set out a policy outlining the circumstances under which they will undertake network extensions and, as part of their business plan, estimate the cost of complying with this policy. The GDN will define an appropriate output measure (eg the number of fuel poor households connected), and the required revenues to achieve the proposed outputs. If accepted the GDN would then be required to comply with this policy and expenditure in this area would be treated the same as other areas, ie subject to the efficiency incentive rate to improve delivery of the project.

- **Option 2:** A simpler approach whereby GDNs are allocated an annual budget on a 'use it or lose it' basis on connecting eligible customers under the scheme. The GDNs would not be required to outline a policy.

Summary of responses

6.5. Responses to the consultation agreed that the fuel poor network extensions scheme is still an appropriate method of assisting vulnerable customers, but some customers in rural areas are still difficult to reach. Some respondents also agreed that we needed to consider the impacts of alternative heating technologies within the price review period. Others suggested amending the economic test applied to each scheme to capture any associated carbon savings.

6.6. Another respondent suggested levying higher transportation charges to vulnerable customers in more remote areas to cover the additional costs of connection. In this scenario, eligible customers would be subject to higher ongoing transportation charges in lieu of paying a higher contribution to their connection charge.

6.7. Of the two funding options proposed for the scheme, no strong preference was received for either, but both were considered viable.

Our decision

6.8. We welcome the views received from respondents. We consider that the fuel poor network extensions scheme remains an effective method of assisting vulnerable customers.

6.9. We propose to continue with the scheme, but will conduct a review in conjunction with other agencies in 2014 to assess whether it still serves as a suitable solution for vulnerable customers. To this aim we will require the GDNs to record accurate information on which fuels customers are switching from, to allow us to calculate the aggregate carbon savings of the scheme.

6.10. We note the proposal to amend the economic test to include the carbon savings associated with customers switching from existing fuel supplies to natural gas, and to charge higher transportation charges (to allow for a greater off-set in the economic test and lower up-front connection charge). We do not consider it necessary to consider these proposals within the price control. If the GDNs consider there is sufficient evidence to justify the change, they are able to propose changes to their connection charging methodology outside of the price review. With regard to eligibility, we intend to review this within the current policy framework.

6.11. With regard to the funding options, we intend to introduce option one, ie an outputs based approach. In their July business plans, we will require companies to identify an expected output for the scheme, eg in terms of fuel poor households connected, and their estimate of the costs of delivering this output. This approach will provide strong incentives for GDNs to minimise connection costs.

6.12. The Discretionary Reward Scheme (DRS) will also provide a financial incentive to GDNs to facilitate the development of non-network solutions to the fuel poor. In Chapter three, we set out more details with regard to our proposed approach for the DRS.

Carbon monoxide (CO)

Summary of consultation proposals

6.13. CO is a colourless and odourless gas that is produced when burning carbon fuels. CO presents a serious risk to public safety because it is normally undetectable, and can cause death, acute injury or chronic health problems.

6.14. In our strategy consultation we considered that GDNs have a role to play in reducing risks associated with CO poisoning. We would therefore give consideration to fund network company proposals for CO safety schemes to be undertaken in the RIIO-GD1 period.

6.15. We expected GDNs to instigate and monitor trials of various CO safety related initiatives during 2011. The outputs from these trials will be used to assess the viability of the proposed schemes and relevant output measures that could accompany their implementation.

6.16. As a number of these trials have not yet begun, we do not expect GDNs to include details on the costs of such schemes in their July Business Plan. We would however expect to agree to the roll out of any successful trials¹⁴ in time for the companies' Final Business Plan submission in mid-2012.

Summary of responses

6.17. Network companies and other respondents were cautiously supportive of funding being provided for schemes in relation to CO safety. They noted that we need to have regard to the legal liabilities associated with extending activities and the responsibilities that lie with other organisations.

6.18. One network company did not support output targets to be attached to CO safety activities, as these would be beyond the ability of GDNs to control. Output

¹⁴ Companies have recently updated us as to the status of their CO trials. We summarise these as follows: (i) WWU has started CO awareness campaigns amongst the aged and students, are trialling Personal Atmosphere Monitors issued to staff and considering trials to issue CO alarm vouchers to vulnerable customers. They plan to raise awareness of the dangers of CO among vulnerable populations and in the 'CO Hot Spot' areas that have been identified in the Gas Safety Trust's report (<http://www.gas-safety-trust.org.uk/carbon-monoxide-hotspot-report-2010>). (ii) NGG has commenced a trial to issue CO alarms free of charge to at-risk or vulnerable customers that are personally identified by first call operatives. (iii) NGN propose a trial to roll out a modification of the Gascoseeker (ie their existing equipment used to measure natural gas in air) to include a CO gas analyser sensor to enable them to also measure the presence of CO in air. (iv) SGN proposed trials comprises the following elements: (a) raising awareness of dangers of CO by improving the customer call back process; (b) modifying quality of checks carried out within an emergency service by looking into CO spillage in confined spaces; and, (c) providing a maintenance and repair service which is customer driven.

targets suggested by the companies included the number of customers visited by the GDN where CO inspections were undertaken or literature/alarms issued. These types of outputs could be supported by an assessment of the number of hazards identified.

6.19. Respondents identified few other social issues against which we should set output targets. One supplier wanted the GDNs to be required to maintain a register of customers who receive priority services. At present this is held by the supplier, who advises the GDN of a customer's status. If the customer changes supplier however, there is no facility for either the previous supplier or the GDN to advise the new supplier that the customer is eligible for priority services. A consumer group would like natural gas leak alarms to be issued to customers with no sense of smell.

Our decision

6.20. Responses to the consultation suggest that our proposal to fund activities relating to CO safety is appropriate.

6.21. The GDNs are each in the process of identifying and trialling the initiatives that they believe may support their role in addressing CO related risks. The results of these trials will allow us to assess the associated costs and outputs and decide on whether or not to allow funding for these activities in RIIO-GD1.

6.22. In advance of this assessment it is not possible to establish the outputs we expect the network companies to deliver in RIIO-GD1. Once we have identified and allowed funding for the schemes that we believe most appropriately address CO-related risks, we will set outputs if appropriate, or introduce licence obligations on network companies to deliver these schemes.

6.23. We do not require network companies to include any costs associated with CO-safety activities in their July business plan submission. We anticipate that the work to assess trials should be complete, at least for some network companies, by autumn, in time to incorporate the preferred scheme costs in the December 2011 consultation for fast-tracked companies, and the initial proposals for non fast-tracked companies in summer 2012.

6.24. The respondents did not identify any additional outputs in relation to social objectives. As set out above, we will introduce a DRS to incentivise companies to focus on meeting social (and environmental) objectives not funded at the price review, as we discuss in Chapter three.

7. Connections

Chapter summary

In this chapter, we set out our strategy in relation to the connection standards of performance that we introduced at GDPCR. This includes whether we will: extend standards to distributed gas customers; introduce additional connections standards; change the penalty payments and timeframes associated with existing standards. We also set out our strategy in relation to connections margins.

Summary of consultation proposals

7.1. In our December document we asked stakeholders whether the current arrangements for gas connection margins were appropriate. In particular we asked whether there was a need to introduce regulated margins for potentially contestable market segments as we did in electricity at DPCR5.

7.2. We also asked stakeholders to consider whether the current gas connection standards of performance remained appropriate. In particular we asked:

- whether there were market segments where competition works sufficiently well such that we should exclude them from the guaranteed standards regime
- whether any new standards were required to ensure that gas connection customers receive a good standard of service
- whether we should change any of the existing standards' timescales, penalties, or penalty caps (for example, to bring them into line with the guaranteed standards in electricity).

7.3. In addition, we asked stakeholders whether standards of performance should be extended to distributed gas customers or whether new standards of performance should be introduced for these customers. We also asked whether we should revisit this issue part way through the RIIO-GD1, once the market has developed.

Summary of responses

7.4. The majority of the GDN respondents considered that there was no need to change the existing connections margin arrangements. We did not receive any feedback on this issue from other stakeholders.

7.5. There was recognition from the GDNs that competition is working well in a number of market segments. Two GDNs considered that further market segments, in addition to those already excluded, could be excluded from the standards of performance on the grounds that competition was working sufficiently well. Respondents did not consider that new standards were required for demand connections customers. GDNs did not consider that the gas connection standards should be amended to bring them in line with the electricity connections standards of performance. A consumer body however considered that the caps currently applied to penalty payments for each connection should be removed.

7.6. GDN respondents considered that Ofgem should not introduce new standards of performance for distributed gas customers at this time. They also considered that the current voluntary scheme (which extends the current standards to Independent Gas Transporters (IGTs) and Utility Infrastructure Providers (UIPs)) was not suitable for extension to distributed gas customers. One reason for this is that the majority of distributed gas connections would be considered 'complex' and therefore excluded from the current standards. One GDN suggested that new voluntary service levels could be introduced.

Our decision

Margins

7.7. Whilst one GDN felt it was appropriate to reconsider connection margin arrangements, in view of arrangements introduced for DNOs through DPCR5¹⁵, we did not receive any evidence that a change in margin arrangements is required to encourage competition.

7.8. We note from GDN responses to our December document that not all GDNs currently charge a margin on eligible connection work. However, we also note that the market share of non-incumbents (UIPs) in the gas connections market is significantly higher than that in the electricity connections market. We have not received any feedback from UIPs that a lack of headroom is affecting their ability to compete in the market. Therefore, given current levels of competition in the gas connections market and the fact that we have not been provided with any evidence that a change in margin arrangements is required to encourage competition, we do not propose to alter current margin arrangements for RIIO-GD1.

The gas connection standards of performance

Excluding market segments from the standards

7.9. We note that the following market segments are already excluded from the gas connection standards of performance:

- developments of at least five new build domestic or non-domestic premises (where there is no existing connection to the GDN's pipeline system)
- premises to which gas will be conveyed at more than a seven bar gauge (intermediate pressure customers)
- complex and excluded connections.

7.10. We do not intend to exclude any further market segments from the standards at this time.

¹⁵ At DPCR5, to provide more headroom for the development of competition, we introduced a (per connection) four per cent regulated margin for contestable connection activities in market segments that are considered potentially competitive. We also gave DNOs the opportunity to charge an unregulated margin in these market segments if they passed a competition test.

7.11. We agree that competition is working well in a number of market segments. In 2009-10, 58 per cent of all non-domestic connections and 85 per cent of medium pressure connections to new domestic housing were completed by non-incumbents. However, we are mindful of our duty to protect customer interests and we have not been provided with any evidence that this will be achieved by excluding further market segments from the standards.

New standards and consistency with electricity connection standards' timescales and penalties

7.12. Respondents to our December consultation did not highlight the need for any new standards of performance, and therefore we propose to retain the existing standards as they are.

7.13. While we note that there are a number of differences in the timeframes and penalties associated with the gas and electricity connection standards, we stated in December that we did not propose to change the current standards unless there was a clear reason for doing so. While one consumer body's response to our December consultation believes that caps on penalty payments should be removed, we did not receive any other responses that suggested the standards should be amended.

7.14. GDN performance against the standards is good (with standards being met on average 99 per cent of the time in 2009-10). We also note that we receive few complaints about GDNs' connections service when compared to complaints received about electricity connections. In relation to caps on penalty payments, we note that in 2009-10 caps were reached in only 0.3 per cent of cases where connection services were provided under the standards. Given this, we do not intend to amend the timescales, penalties or caps associated with the gas connection standards.

Standards of service for distributed gas customers

Extending the current voluntary scheme to distributed gas customers

7.15. Responses to our December consultation highlighted that the majority of distributed gas connections would fall under the definition of 'sufficient complexity' within the connections standards and therefore be excluded from the current voluntary scheme. Respondents also suggested that the timeframes set out in the current voluntary scheme for demand connections may not be suitable for distributed gas customers.

7.16. Given this, we do not consider that an extension of the current voluntary scheme to distributed gas customers is appropriate.

Introducing standards of performance for distributed gas customers

7.17. We agree with the GDNs that there is not currently sufficient experience of this customer group to identify new standards of performance. Therefore, we will not be introducing formal standards for distributed gas customers at this time. We do however intend to revisit this issue midway through the RIIO-GD1 period when we will have a greater understanding of entry customers' needs.

7.18. Given that we consider it important that this emerging customer group receives a good level of service, we are keen, in the absence of formal performance standards, for the GDNs to develop, in consultation with entry customers, a set of voluntary standards of service for distributed gas customers. Therefore, we expect the GDNs to commit to introducing a voluntary scheme for distributed generation connections in their July business plan submissions.

7.19. We expect that GDNs will agree standards of service for the issuing of quotations, the scheduling of works and the completion of works. We expect that the voluntary standards will apply nationally. We also expect that GDNs will make penalty payments to distributed gas customers where they fail to meet the voluntary standards and that they will report their performance to Ofgem and publish it on their website. We intend to work with the GDNs and the Energy Networks Association to establish the voluntary standards in the coming months.

8. Safety

Chapter summary

The provision of a safe network is the most important objective for the GDNs. This chapter sets out our decision on the primary outputs, secondary deliverables and any associated incentive mechanisms for the safety output category.

Summary of consultation proposals

8.1. In our December document we consulted on a number of safety related primary outputs and associated secondary deliverables that we would require GDNs to deliver for RIIO-GD1. We summarise our December proposals in Table 8.1.

8.2. As set out in Table 8.1, we proposed a change to the existing revenue driver in relation to the iron mains programme. The existing mechanism rewards companies according to the length of, and diameter of, mains and service pipes replaced. We proposed to replace this mechanism with a risk-based driver, which would provide strong incentives for GDNs to seek lower cost and innovative ways to deliver a safe network. Our proposed output measures for the GDNs emergency service reflected current performance standards. The output measures in relation to 'repairs' and 'Major Accident Hazard Prevention' were based on GDNs' compliance with the HSE safety case.

8.3. In general, we did not propose any specific financial rewards or penalties in relation to the set of safety related outputs, as in general companies have to comply with absolute performance standards set by the HSE, and the HSE will pursue enforcement action (including the imposition of penalties) in the event of non-compliance. We did not consider that it was reasonable or necessary for us to impose additional penalties or equally reward companies for outperforming safety requirements.

8.4. In addition, we also set out proposals that would require GDNs to develop a broad approach to asset management, which would lead to a profound change to the way GDNs currently manage and plan investment on their networks. Our proposed approach cuts across both network safety and reliability output categories, and we discuss our proposals and decision with regard to the broad approach to asset management in Chapter ten.

Table 8.1: Summary of proposed safety primary outputs and secondary deliverables

Output category	Primary output	Secondary deliverables	Incentive mechanism
Mains replacement	Level of risk removed	Gas-in-buildings; number of fractures; length of main off-risk. Asset health and risk metrics	Propose to use a revenue driver based on risk removed rather length of mains abandoned
Emergency response	% uncontrolled gas escapes attended to within one hour; % of controlled gas escapes attended to within two hours		None – Requirement to comply with safety case/licence requirements
Repair	Management of repairs: Time taken to complete repair by risk category	% preventions undertaken within 12 hours	None – Requirement to comply with safety case/licence requirements
Major Accident Hazard Prevention	Gas Safety (Management) Regulations(1996) (GS(M)R) safety case acceptance by HSE; Control of major accident hazards (1999) (COMAH) safety report reviewed by HSE		None – Requirement to comply with safety case/licence requirements

Summary of responses

8.5. In general the GDNs supported our proposed set of primary outputs and secondary deliverables. Respondents also agreed that we should not introduce financial penalties and rewards in relation to output measures where the HSE has set an absolute performance standard, and responsibility for compliance (and imposing penalties) rests with them.

8.6. A number of GDNs considered that any incentive mechanism associated with asset health measures should be symmetric (eg we should recognise both shortfalls and over delivery in setting output targets at the subsequent review) rather than asymmetric (where we would only recognise shortfalls) to mitigate downside risk.

Mains Replacement

8.7. The respondents generally supported our proposal to replace the current repex revenue driver based on mains replaced with a revenue driver based on risk removed, although the GDNs raised a number of concerns with how the mechanism would work in practice. For example, a number of the GDNs asked how the mechanism would accommodate service pipes which currently do not have an associated risk score. The GDNs also asked how the mechanism would accommodate the dynamic nature of risk, ie where the risk associated with an iron mains changes over time within the review period.

8.8. The GDNs noted that they expected to continue to work with Ofgem in the development of this primary output to resolve these practical issues.

8.9. One GDN considered that the adoption of a risk-removed output measure would result in reduced costs of delivering a safe network, and therefore lower bills for customers.

8.10. The HSE agreed with our proposed primary outputs and secondary deliverables. They also supported our proposed adoption of a risk removed measure for mains replacement. However, they also noted that our final decision with regard to the repex risk-removed output measure and the design of the mechanism should take into account the outcome of their repex review which they expect to conclude towards the end of March 2011.

8.11. Other stakeholders also supported the proposed move to a risk removed output measure and welcomed the corresponding development of asset health and criticality indices (as we discuss in Chapter ten) which will provide a framework for companies to optimise investment across all network asset classes.

8.12. A number of respondents highlighted the uncertainty over the future role of gas distribution networks and stated that we should ensure the proposed risk-removed measure offered value for money in the short and longer term.

8.13. One of the GDNs proposed an additional output measure focusing on maintaining the security of network assets (both Critical National Infrastructure (CNI) and critical information infrastructure), which would be relevant to both safety and reliability output categories.

Emergency Response

8.14. A number of GDNs stated that we should fully fund the cost of the emergency service, and provide incentives for GDNs to efficiently use the time of the first call operatives (FCOs) when they are not fully engaged on emergency work.

8.15. SGN proposed an alternative option for the funding of the emergency service designed to take into account the expected reduction in meter fill-in work. They

proposed a base level of funding for the current output standard (where GDNs are required to respond to 97 per cent of uncontrolled and controlled gas escapes within one and two hours respectively), and an asymmetric reward/penalty around the actual response time achieved. Their proposal would also provide an incentive to efficiently utilise the time of the emergency service operatives when they are not engaged in emergency responses.

Repair

8.16. There were mixed responses on the proposed primary and secondary output measures for repair. GDNs broadly agreed that response times and performance to complete repairs are key performance indicators.

8.17. The GDNs highlighted that since Distribution Network (DN) Sales they had all introduced their own specific solutions to risk based management of escapes which formed part of their safety case submission to the HSE. Consolidation of these different processes into a common framework would be difficult and would potentially stifle innovation.

8.18. Following further discussions in our recent working groups, the GDNs consider that the proposed output measure will incentivise the right behaviour, ie it will incentivise GDNs to address the highest risk repairs first before addressing lower risk repairs.

8.19. The HSE supported our proposal to prioritise the management of the emergency responses and repair on the basis of the relative level of risk posed to the public.

8.20. One GDN proposed that the order of the primary and secondary outputs should be reversed since the 12 hour response provided both safety and environmental benefits over and above the proposed primary measure.

Major Accident Hazard Prevention (MAHP)

8.21. In general, the GDNs welcomed the inclusion of this output measure as it related to high-pressure tier assets as opposed to lower-tier assets, which was the primary focus of the other output measures. They considered that it was important to include an output in relation to high-pressure tier assets as these constitute an important investment driver for the GDNs.

8.22. The HSE stated that compliance with MAHP requirements was an essential component of delivering a safe network. The HSE also considered that the existing penalties that the HSE could impose for compliance failure were adequate.

Our decision

8.23. As set out in our December document, the GDNs are subject to a range of statutory safety obligations which we need to take into account in developing our safety outputs measures. For example, the GDNs must comply with:

- GSMR that stipulate that the GDN must produce a safety case which describes how they will manage the gas network and how they will deal with emergencies. This safety case is subject to acceptance and routine inspection by the HSE
- the 'Health and Safety at Work' Act makes provision for securing the health, safety and welfare of persons at work and for protecting others against risks to health or safety in connection with the activities of persons at work
- the GDN must also provide the HSE, the Scottish Environment Protection Agency (SEPA) and/or the Environment Agency (EA) with a risk assessment in accordance with the Gas Safety (Management) Regulations, Control of Major Accident Hazard (COMAH) regulations and the Pipeline Safety Regulations.

8.24. The HSE is the primary safety regulator for the gas networks in Great Britain, and the decisions we set out in relation to safety outputs measures are consistent with the HSE obligations. We have not sought to introduce output measures above and beyond the obligations set by the HSE. For most of the outputs, we will require the GDNs in their regulatory submissions to demonstrate their compliance with the HSE obligations and the safety case they have agreed with the HSE. Responsibility for ensuring compliance with these obligations, and taking associated enforcement action, rests primarily with the HSE.

8.25. As there are statutory requirements on GDNs to meet the safety standards established by the HSE we do not consider it is appropriate to introduce rewards and/or penalties in relation to output performance. In accepting the price control package, the GDNs will be agreeing that we have allowed them a sufficient cost allowance to comply with their safety and other statutory and licence obligations.

Mains replacement

8.26. The respondents broadly agreed with our proposed adoption of a risk-removed measure, and we confirm our intention to introduce a primary output based on risk-removed. In light of the ongoing work being carried out by CEPA for the HSE and Ofgem we are considering whether the output should be linked to the likelihood of an incident¹⁶ or alternatively an output focussed on the expected number of gas in building events which is also estimated by the Mains Risk Prioritisation System (MRPS).

8.27. As our measure of risk removed we propose to use the well-established modelling framework for measuring iron main risk (MRPS) which is used by GDNs to prioritise their current programme for replicating iron mains. We have collected historic data from the GDNs on the cost and level of risk removed, which we propose

¹⁶ An incident means an iron mains gas failure that leads to injuries, fatalities or damage to buildings. The current definition of risk in the MRPS is the forecast number of incidents per year.

to draw on in calibrating the mechanism (ie in terms of the cost allowance per unit of risk removed).

8.28. We consider that focusing the output on risk removed rather than mains abandoned provides appropriate incentives on the GDNs to consider how the risks associated with iron mains can be managed as opposed to the current mechanism which simply provides an incentive to minimise the cost of the abandonment programme. The risk based approach gives the GDNs a greater opportunity to consider all mitigation measures for managing the risk from the iron mains population, from selection and design of possible solutions, through to the efficient delivery of the proposed risk reduction solution. For example, new innovative techniques such as spraying or lining the interior of mains may be economic.

8.29. Whilst we acknowledge the GDNs' practical concerns with the use of the MRPS score as the output measure we feel that none of the issues raised are insurmountable, and that issues raised over the volatility of the risk measure by GDN by year can be resolved through base lining of planned and actual risk removed. For example, we are developing a practical solution to take into account the dynamic nature of the risk. This would involve us periodically revising companies' risk-removed baseline in a mechanistic way to reflect any revisions to mains risk scores.

8.30. The GDNs have also highlighted concerns over lead times between initial selection of iron mains for replacement, which can take place up to two years prior to the reporting year, and physical delivery of the work. We consider that it is possible to normalise for dynamic changes in the risk score in assessing the delivery of risk removed.

8.31. Our proposal for the iron mains asset replacement is consistent with our longer term aim to introduce a broad approach to asset management, where we expect the GDNs to identify the risks associated with all of their assets, including health, safety, environmental and security of supply risks, and to optimise their investment plan across asset classes according to the risk scores. Our decision to introduce an output based measure for replex based on risk is an important component of the broader approach to asset management.

8.32. In Chapter ten, we discuss in more detail options for how the risk-removed output mechanism will work. We also set out what we expect GDNs to include within their July business plans given the uncertainty in relation to the HSE review of replex.

8.33. We have decided that the secondary deliverables associated with mains replacement should be gas-in-buildings, number of fractures and length of main off-risk together with measures of asset health, criticality and risk indices discussed further in Chapter ten. We consider these measures constitute useful metrics for monitoring and assessing the impact of the mains replacement programme on network safety.

Emergency Response

8.34. Most of the respondents (including most of the GDNs) supported our proposed primary output for emergencies based on the GDNs' licence requirements to attend 97 per cent of uncontrolled and controlled gas escapes within one and two hours respectively¹⁷, and we have decided to implement this output measure.

8.35. SGN proposed an alternative output mechanism, which would provide a reward (or penalty) for companies that exceeded (or fell short of) this output target.

8.36. However, we consider that stakeholders expect this standard to be achieved and we therefore do not propose to introduce a marginal incentive rate to reward or penalise companies for variations in output performance around the current standards.

8.37. The HSE also raised concerns that such an approach may lead to a decline in performance. They indicated an approach that focussed on the relative importance of different gas escapes could be considered as part of an output but that a reduction in the overall level of performance would not be acceptable. We also note that there are difficulties in determining the value customers place on an incremental improvement in performance which we would need to understand to set the marginal incentive rate, and to ensure companies optimised their level of performance.

8.38. SGN's proposal included an incentive around finding in-fill work for the first call operatives when they were not engaged in emergency work. However, we do not consider that we need to introduce a separate incentive mechanism in relation to in-fill work. The IQI efficiency incentive rate will provide a strong incentive on GDNs to manage the emergency response activity efficiently and seek opportunities for maximising the extent to which their first call operatives can support other work when they are not attending emergency jobs.

8.39. In summary, we have decided to continue with the 97 per cent standards as the primary output for the emergency response, enforced by the current licence condition, and not to introduce additional incentive arrangements for this output measure.

Repair

8.40. We acknowledge the GDNs have unique solutions for the risk based management of gas escapes. We therefore believe it is appropriate to set individual outputs for GDNs drawing on their own risk-based management systems rather than introduce a common management system and output measure for all GDNs. We will set GDNs' output baselines by considering the total outstanding risk currently being managed by the GDN in GDPCR. We would then expect the GDN to maintain, or improve, this performance going forwards.

¹⁷ Standard Special Condition 10 of the Gas Distribution licences

8.41. This approach takes into account the individual risk associated with particular gas escapes as well as the time taken to repair which incentivises the GDNs to deal with the higher risk gas escapes first.

8.42. In our working group discussions, we have identified the percentage of repairs completed within 12 hours as a suitable secondary measure. This measure is consistent with the current reporting requirements by the GDNs to the HSE under GSMR regulation 7. The proposal also takes into account the time taken to complete repairs which is important to customers. We do not consider that it should be used as the primary measure as it could provide perverse incentives to focus on the easiest repairs first in order to complete larger volumes within the 12 hour period rather than target the repairs that present the greatest risk to the public.

Major Accident Hazard Prevention (MAHP)

8.43. We have decided that the appropriate primary output for major hazard prevention is compliance with the existing safety requirements which are set out in legislation and monitored by the HSE.

8.44. The Gas Safety (Management) Regulations (1996) (GS(M)R) requires gas conveyors to prepare a safety case containing the information required by Schedule 1 of the Regulations and have it formally accepted by HSE before conveying gas.

8.45. To comply with COMAH the GDNs must submit a safety report, a document written by the site operator and sent to the Competent Authority (CA) to demonstrate that all the necessary measures have been taken to prevent major accidents and to limit their consequences to people and the environment. The CA is responsible for checking that site operators take steps to prevent and limit the effects of major accidents.

8.46. We consider that the approval of these documents by the HSE and other Competent Authorities provides assurance that the GDNs are maintaining their assets and associated processes to the requisite standard.

9. Reliability

Chapter Summary

This chapter sets out our decision on primary outputs and secondary deliverables for reliability for gas distribution during RIIO-GD1. We also set out our proposals on how incentives should be applied to these.

Summary of consultation proposals

9.1. In the December document we set out a number of reliability related primary outputs and secondary deliverables that we would require GDNs to deliver in RIIO-GD1. We summarise our proposed outputs, secondary deliverables and associated incentive mechanisms in Table 9.1.

9.2. As discussed above, we also set out proposals that would require GDNs to develop a broad approach to asset management, which relates to a number of output categories including reliability. We address this issue in detail in Chapter ten.

Table 9.1: Summary of proposed network reliability output measures, secondary deliverables and associated incentive mechanisms

Output category	Primary output	Secondary deliverables	Incentive mechanism
Loss of supply	The number & duration of interruptions disaggregated by cause (excluding large events)	Asset health and risk metrics	Primary output incentivised as part of the Guaranteed Standards. Secondary output incentivised by ex post review of performance against target health, criticality and risk indices
Network capacity	Achieving 1:20 obligation	Asset utilisation/capacity charts	Ex post review of asset utilisation against target utilisation index.
Network reliability	Maintaining operational performance	No. & value of off-take meter error reports; Fault/Duration measure	None – reputational incentive only through reporting on performance
Records and data accuracy	Maintaining network records	% of mains records updated within 42 days; No. of third-party reports on mains location (DR8).	None - reputational incentive only through reporting on performance

Loss of supply

9.3. We proposed that the number and duration of supply interruptions should be our primary output measures. We did not propose to introduce a reward/penalty in relation to companies' performance other than through the existing guaranteed standards, whereby GDNs make payments to customers for unplanned interruptions longer than 24 hours.

9.4. The primary output measure constitutes a lagged indicator of network reliability. We therefore proposed to use asset health and risk metrics as second deliverables to ensure that we can monitor network performance in the short-term, and ensure the long-term delivery of the primary output (see Chapter ten).

Network Capacity

9.5. We proposed that the primary output measure would be the 1 in 20 peak day network capacity standard, and we outlined our intention to develop output measures based on the availability of capacity on their networks. We also stated that we would unify the current incentive arrangements applying to the different options open to GDNs to meet incremental capacity, ie through own-network capex, NTS off take, and interruptible contracts, to ensure GDNs meet the capacity standard at least cost.

9.6. In addition to unifying the current incentive arrangements for capacity, we also proposed to require GDNs to include the real option value of delaying capital investment within their Interruptible Contract (IC) auctions to ensure they take into account the uncertainty with regard to future network use in choosing between capex and demand-side (ie IC) solutions.

9.7. We also proposed to require the GDNs to ensure they considered the option and costs of obtaining incremental capacity from the NTS in delivering incremental capacity. We highlighted that we would expect the GDNs to consider NTS flat or flexible capacity options in their business plans.

Network Reliability

9.8. We proposed the primary output associated with network reliability should be to maintain levels of operational performance, and that this would be supported by a number of secondary deliverables.

9.9. In particular we proposed a secondary deliverable in relation to offtake meter errors which was identified by suppliers/shippers as a key issue for them. We proposed to include an output measure in relation to the number of faults on a network and time taken for the GDNs to respond.

Records and Data Accuracy

9.10. We consulted on introducing a primary output associated with maintaining network records. We considered that the primary output measure would have two distinct benefits. First, it would provide incentives for GDNs to update their records in a timely and accurate manner and thereby improve the efficiency with which GDNs plan their works. Second, third parties proposing to connect to the GDNs' network would have access to better data, which would allow them to plan and undertake connections more efficiently.

Summary of responses

Loss of supply

9.11. Only two GDNs commented on the loss of supply output and both respondents (NGG and WWU) supported the output measure.

9.12. NG subsequently set out a proposal for a modified loss of supply incentive at the safety and reliability working group on held in February 2011. NG's proposal focuses on setting target levels of performance for the duration of interruptions (customer minutes lost) for all planned and unplanned interruptions excluding large events that impact on greater than 250 customers. Under the mechanism, GDNs would face rewards and penalties in respect to over and underperformance against the target level.

9.13. Two GDNs supported in principle an incentive around loss of supply and for this to cover both planned and unplanned interruption but did not agree with NGG's proposal.

9.14. One GDN indicated that the systems for recording unplanned interruptions are robust driven in part by the requirements of the Guaranteed Standards. However, it considered that the systems in place for recording planned interruptions are less robust and would need to be improved if there was an output measure and incentive mechanism in relation to unplanned interruptions.

Network Capacity

9.15. Responses to our proposals for capacity outputs were limited to the GDNs. In general they were supportive of the development of a capacity outputs measure. There was support for our proposal to equalise incentives across different types of expenditure, the inclusion of a real option value in interruptible contracting, and the development of a process to support efficient investment across the NTS/GDN interface. Two GDNs stated that they supported maintaining separate incentives for spending on NTS exit capacity and interruptible contracts.

Network Reliability

9.16. One non GDN respondent expressed support for a specific output measure and incentive for offtake meter errors. They highlighted the number and volume of errors had increased significantly over recent years, and that a number of these had been down to network errors.

9.17. A number of respondents, including some GDNs, raised issues over the controllability of some of the errors which were deemed outside of the GDNs' control. The point was raised that although the number of reports had recently increased, this was down to better reporting and that for a majority of these errors the value of the error was small.

9.18. The GDNs identified that one reason for the increased number of error reports was due to a new process for reporting Measurement Errors through the Joint Office (JO) being implemented on the 1 September 2008 under Modification 0185VV. After identification of a potential Measurement Error the GDN is required to provide the JO with details of the error for publication on the JO of Gas Transporters' website, as part of the Measurement Error Notification Mechanism.

9.19. One GDN proposed an incentive mechanism based on a percentage error level of energy throughput per network. This would be based on an acceptable level of error against the costs that GDNs would incur to reduce the likelihood of occurrence.

9.20. The GDNs state any incentive mechanism should appropriately evaluate the materiality of performance, drive the right behaviour and be a stimulus for improvement.

9.21. The GDNs highlight that accuracy levels are currently over 99.9 per cent and therefore only have small financial implications for Shippers, Suppliers and consumers. They do not see this being a suitable candidate for a financial incentive mechanism.

9.22. As part of the ongoing working group discussions two proposals were submitted as a potential output measure.

Option 1

9.23. There are a number of positive actions that GDNs can undertake to reduce the risk of Offtake Measurement Errors, where the error rate may fall outside the acceptable percentage error. These are linked to the following:

- investment to complement or modify existing assets and/or replace them.
- increased monitoring
- investment in remote condition monitoring
- investigation to improve and amend / implementation of policies, procedures, specifications
- investment in training and retention of highly trained and dedicated specialists.

9.24. One or a combination of the above activities would need to be included in GDN business plans in order to ensure this stakeholder requirement is sufficiently managed to reduce the likelihood of meter error occurrence.

Option 2

9.25. The second GDN collaborative proposal considers the errors as a percentage of daily throughput or amount of Local Distribution Zone (LDZ) energy.

9.26. For each offtake the reported throughput would be compared with the corrected throughput at the end of each year. The absolute sum of the errors would then be expressed as a percentage of the total LDZ throughput. Table 9.2 illustrates this.

Table 9.2 Example of meter accuracy assessment

Asset Name LDZ1	Total throughput in period of error	Corrected throughput in period of error	Energy correction in period
Offtake A	1 000 000	1 250 000	250 000
Offtake B	2 000 000	2 000 000	0
Offtake C	4 000 000	3 900 000	-100 000
Total	7 000 000	7 150 000	350 000
LDZ1 throughput in year for LDZ1 – 100 000 000			
Throughput corrected (absolute) – 350 000			
Percentage inaccurate in period – 0.35%			

9.27. The GDNs have been carrying out further work to develop a secondary deliverable for network reliability, operational and maintenance performance which focuses on telemetered faults and Pressure System Safety Regulation (PSSR) inspection faults. These are intended to capture the number of asset faults multiplied by the time taken to resolve them.

9.28. Two options were proposed for the secondary output measure:

- option 1 - This would include two measures (a) the number of telemetered faults requiring action within two hours multiplied by the time taken to resolve them and divided by the number of telemetered Above Ground Installations (AGIs). (b) the number of PSSR faults which are an 'imminent danger' or are 'significant faults' which require resolution before the next planned inspection, divided by all AGIs.
- option 2 - As option one, but excluding telemetered faults lasting over 30 days (likely to be mitigated through raising an associated project).

9.29. Two GDNs supported option 1 and two GDNs supported option 2.

Network Records

9.30. We did not receive any responses to our December proposals in relation to network records.

Our decision

Loss of supply

9.31. In our December document, we outlined that the performance incentive in this area would be delivered through the Guaranteed Standards of Performance framework (GSOP) in which GDNs pay compensation of £30 to domestic customers and £50 to non-domestic customers for unplanned interruptions greater than 24 hours and a further payment for each subsequent period of 24 hours. We did not consider that additional incentives, ie in relation to planned interruptions, were necessary. This view was supported by a number of GDNs.

9.32. The likelihood of a customer experiencing an unplanned gas supply interruption is low, on average once every 40 years for a planned interruption, and even less frequent for an unplanned interruption. In addition, the duration of the interruption is usually relatively short for planned interruptions. For mains replacement, the restoration of the supply is coordinated around the customer's availability on the day of the mains decommissioning with the mains replacement teams liaising locally with affected residents.

9.33. The total GDN average customer satisfaction score for duration of planned interruptions increased from 7.41 to 7.65 (out of 10) in the first two years of GDPCR. This indicates that consumers are not unduly concerned about the duration of the interruption.

9.34. We also consider NGs' proposed incentive mechanism could drive an emphasis on duration of interruption rather than on quality of the GDN's service and customer satisfaction. For example, it may be inappropriate to restore a customer's supply late in the evening given the need to enter their premises, if the customer would prefer restoration the following day.

9.35. We have decided that the primary output measure for loss of supply will be the number and duration of planned and unplanned interruptions. However, we do not propose to apply a reward/penalty in relation to planned interruptions or customer minutes lost. For unplanned interruptions, companies will face a reward/penalty based on their payments under the guaranteed standards. We have also commissioned a study, in the context our significant code review of gas emergency arrangements, to consider the value customers place on avoiding a supply interruption, and we will consult on potential changes to the current compensation payments under the guaranteed standards in the light of this study.

9.36. As our secondary deliverables, we will require GDNs to report on the asset health and risk metrics. We discuss our approach in more detail in Chapter ten.

Network Capacity

9.37. Our decision is that the primary capacity output measure for GDNs will be achieving the 1 in 20 planning standard. This will be supported by the following secondary deliverables:

- capability (utilisation) at NTS offtake and pressure reduction installations (PRIs)
- provision of undiversified peak day load
- provision of diversified peak day load¹⁸.

9.38. The PRI and offtake utilisation indices will measure actual weather adjusted (seasonal normal) flows against potential flows (capacity) at each NTS offtake and PRI used by the GDN. The actual and potential flows will change with investment in each type of capacity so that investment in additional NTS exit, storage, network or interruptible capacity will be reflected in utilisation at one or more offtake or PRI.

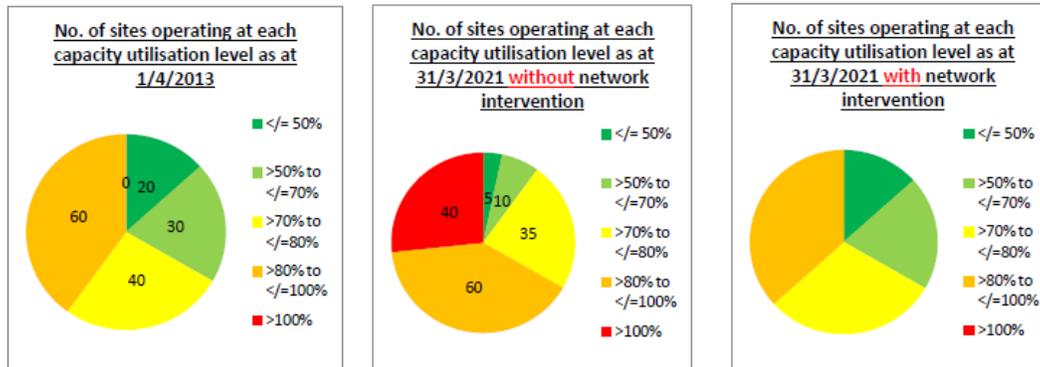
9.39. For each GDN there will be a large number of offtakes and PRIs spread across their networks. Therefore, whilst we recognise the importance of data identifying utilisation at each installation¹⁹ in making investment decisions, there will be a need to provide an overall summary. The summary will give stakeholders an accessible description of what capacity outputs the GDNs are delivering. We provide an example of summary charts and tables that have been discussed at the capacity working group below. We would expect to see summaries based on the example below, and common across all GDNs provided with the companies' July business plans.

¹⁸ More details on these measures can be found in the GDN presentations to the capacity working group these can be found on our website at: <http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/WorkingGroups/Pages/WG.aspx>

¹⁹ In general capacity investment decisions are a response to local network capacity constraints. In these cases utilisation at offtakes/PRIs local to the constraint are the most relevant indicators of the need for investment.

Figure 9.1: Example summary of network utilisation secondary output measure

Capacity utilisation	Number of sites where capacity utilisation exceeds the parameter		
	As at 1/4/2013	As at 31/3/2021 <u>without</u> network intervention	As at 31/3/2021 <u>with</u> network intervention
</= 50%	20	5	20
>50% to </=70%	30	10	30
>70% to </=80%	40	35	45
>80% to </=100%	60	60	55
>100%	0	40	0
Total no. of sites	150	150	150



9.40. The combination of utilisation indices with values for the provision of diversified and undiversified peak day load will allow GDNs to demonstrate the incremental change in capacity they provide in delivering a given level of network utilisation. This is necessary because levels of utilisation on their own may not necessarily show what capacity outputs have been delivered because, depending on outturn demand, a given level of utilisation may be delivered whilst delivering very different levels of incremental capacity. As with the utilisation, changes in peak load at a local level will be important for capacity investment decisions but stakeholders will need to be presented with a high level aggregate view.

9.41. The capacity output measures are intended to capture what network capacity the GDNs (initially) forecast to deliver and (then) actually deliver across the price control period. For us to make this assessment we will require in the companies' plans forecast values for the outputs with and without intervention (investment) at the beginning, at the mid-point, and at the end of the price control period.

9.42. We will set capacity expenditure baselines as part of the overall expenditure allowance subject to a single marginal incentive rate determined by the IQI. There will not be a specific allowance for capacity spending or individual incentives around certain types of capacity such as NTS exit capacity or interruptible contracts. The advantage of such an approach is to provide GDNs with the flexibility to deliver the required investment in the least cost way. All types of expenditure (operating and capital expenditure) will be subject to the same marginal incentive rate under the IQI.

9.43. We will build up our assumption for the cost baselines taking into account the companies' forecasts for different types of capacity and their justification for an appropriate capacity mix. Part of the overall baselines will be based on the amount of money that the GDNs will need to spend on investments that are primarily for the purposes for providing incremental capacity on their networks. These investments will be across the different types of capacity and the GDNs should provide evidence on the expenditure they require for each of these over the price control period in their business plans. That the business plans should include evidence that the GDNs have considered all types of capacity including investment in incremental flexibility and we support the work that the GDNs and NTS have undertaken in developing a process to achieve this²⁰.

9.44. We will use the secondary deliverables to monitor companies' performance during the review. We will also review the companies' performance against the secondary deliverables at the end of RIIO-GD1 to determine whether the company has met its output obligations. We will work-up the detailed arrangements of how we deal with under or over deliveries post March during the development of the RIGs. However, we set out some guiding principles here.

9.45. We intend to put in place symmetric arrangements, that is, we intend to treat both under delivery and over delivery against the capacity utilisation targets in the same way. We also intend to carry forward under delivery or over delivery against the capacity utilisation targets into the next review (eg rather than 'claw back' any under spend associated with under delivery). In the case of both under spend or over spend relative to RIIO-GD1 allowances, companies will share the benefit/cost with customers subject to the IQI efficiency incentive rate.

9.46. In general, in terms of the 'carry forward', where capacity utilisation is higher than the target agreed at the review (ie the company has underperformed), then we intend to require companies to deliver the required additional incremental capacity to meet the capacity utilisation targets at the subsequent price review. In setting allowances at the next review, we will not provide any additional financing for such outputs (companies will finance the delivery from allowances set at RIIO-GD1). Likewise, where capacity utilisation is lower than expected (ie the company has outperformed), then we expect to recognise the additional incremental capacity that the company has delivered at the subsequent price review (subject to a consumer interest test). We will provide an allowance at RIIO-GD2 for such incremental capacity.

²⁰ More details on these measures can be found in the NTS and GDN presentations to the capacity working group these can be found on our website at: <http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/WorkingGroups/Pages/WG.aspx>

9.47. However, in assessing under or over delivery, we will also need to consider how we take into account the effect on companies' outturn capacity utilisation for variations in outturn demand relative to forecast. For example, in designing the incentive arrangements, we might want to protect companies and consumers from demand risk in relation to meeting the required capacity utilisation measures (as we did in designing the capacity output arrangements for DPCR5). For example, where a company delivers (at least) the level of incremental capacity expected at the price review but fails to meet the capacity utilisation target because outturn demand is higher than forecast, we need to consider how we take this into account in assessing their performance. We would welcome companies' views on the extent to which we should mitigate demand risks in their business plan submissions.

9.48. In designing the incentive arrangements, we will also consider whether we need a financial adjustment to reflect the difference in financing costs associated with under or over delivery, in setting allowances at the subsequent review. For example, we will consider whether we need to apply a revenue reduction marginally greater than the financing costs associated with under delivery against agreed levels to ensure that GDNs do not have an incentive to under deliver. Similarly, we will consider whether we need to apply a revenue increase marginally less than the financing costs associated with over delivery in order not to provide an incentive to over deliver.

9.49. In designing the incentive arrangements, we will also consider whether we need a financial adjustment to reflect the difference in financing costs associated with under or over delivery, in setting allowances at the subsequent review. For example, we will consider whether we need to apply a revenue reduction marginally greater than the financing costs associated with under delivery against agreed levels to ensure that GDNs do not have an incentive to under deliver. Similarly, we will consider whether we need to apply a revenue increase marginally less than the financing costs associated with over delivery in order not to provide an incentive to over deliver.

9.50. In designing the incentive arrangements, we will also consider whether we need to introduce an uncertainty mechanism to account for changes in demand outturn relative to forecast (eg as at DPCR5), ie to protect companies and consumers from demand risk in relation to meeting the required capacity output measures. We would welcome companies' views on such a mechanism in their business plan submissions.

9.51. We will work with the GDNs to develop the option value of interruption to be included in interruption contract prices. We would hope to have an agreed method in place before the next annual interruption auction process begins in July.

9.52. In addition to the real option work we will continue to work with the capacity working group going forward in some area where the detail of this decision has to be finalised. These areas include finalising the details of capacity outputs and the reporting regime that will support them and working to develop an appropriate commercial regime that will support investment across the NTS/GDN interface.

Network Reliability

9.53. We welcome the output of the working group and the two proposals put forward by the group.

9.54. We have considered the historical meter error data submitted by the GDNs and the processes in place through the JO and have decided to place an output measure on the GDNs to report meter accuracy. We consider this provides transparency and reputational incentives on the GDNs and that an additional financial incentive is not required.

9.55. Year on year reporting of the percentage of incorrectly recorded throughput as a percentage of total throughput will illustrate for all GDNs what progress has been made to improve on any LDZ, where historical issues have arisen, and continue to illustrate the reliability of LDZs where accuracy has not been a concern. Further meter offtake errors impose a short-term rather than ongoing cost on shippers and suppliers as they will be rectified once the errors are reported.

9.56. For fault reporting we support option 1 of the GDNs' proposals which includes all telemetered and relevant PSSR faults. It provides an output measure which will enable monitoring of historical performance throughout the price control period as well as an opportunity to compare across the GDNs in terms of changes in levels of performance. We consider that the use of this lagging indicator in conjunction with the asset health, criticality and risk measures set out in Chapter nine will provide a useful measure of the GDNs' performance.

9.57. The proposed option 2 for fault reporting, which omits telemetered faults over 30 days, may drive inappropriate behaviour from the GDNs to categorise faults inconsistently. We consider this secondary output measure which considers the number of faults and time taken to resolve along with a calibration against the number of assets will provide a useful measure to ensure the GDNs are effectively managing their networks. Once again comparison of this measure year on year will enable the GDNs performance to be tracked through the price control period to ensure standards are being maintained.

9.58. The GDNs proposed an audit of the process for the collection and analysis of fault data be established and carried out by each GDN and the HSE. Audit compliance with this measure will determine whether the GDNs are reporting in a consistent and comparable manner. We are not proposing that an incentive is attached to this output.

Network Records

9.59. In our working groups following the publication of the December document, we considered whether other output measures provided incentives for GDNs to maintain data accuracy or whether we needed to retain this specific output measure.

9.60. We will pursue placing a licence requirement on the GDNs to develop and maintain accurate data records as a necessary step for developing a broader

approach to asset management as set out in Chapter ten. Assuming such a move is successful, we do not consider it necessary to introduce a further output relating to asset records and we have decided not to adopt the primary outputs and secondary deliverables associated with this category.

10. Broader approach to asset risk management

Chapter Summary

This chapter sets out our decision to establish a primary output based on network risks that are removed associated with repex investment. We describe the HSE's ongoing work to review the repex programme and our decision on a number of mechanisms to manage uncertainty associated with the future of the repex programme. We also set out our requirement for the GDNs to develop improved asset health, condition and risk information. In the longer term this should facilitate a more robust, holistic approach to asset management by the GDNs.

Summary of consultation proposals

10.1. In the December document we highlighted the significance of the HSE's repex programme which targets the replacement of iron mains within 30 metres of a building over a 30 year period (referred to as the 30:30 programme), and the current HSE led review of the programme. We explained that CEPA is currently undertaking work for the HSE and Ofgem to review the effectiveness of the iron mains replacement programme (IMRP) to date in removing risk and carry out cost-benefit analysis on alternative options for the programme going forwards. We indicated that the outcome of the HSE review could have a significant impact on the 30:30 programme and therefore on the RIIO-GD1 process.

10.2. In advance of the recommendations of the review we had considered some uncertainty mechanisms to accommodate changes in the GDNs' agreed repex programmes. These mechanisms were established to account for the outcome of the HSE led review and/or for any changes that might arise if the required GDN asset/network risk information was in place allowing the GDNs to manage their assets differently.

10.3. We set out that a key feature of our proposals for the outputs relating to network safety and reliability was to include secondary output measures around asset health and risk. We explained it was important to encourage companies to look for ways to deliver long term value for money, and that without the broader secondary output measures there is a risk that they simply focus on how to meet their safety and reliability requirements in a short term, least cost manner.

10.4. We highlighted our concerns over the significant limitations to the existing data, and that substantial progress was needed to improve the information held about network assets both during this price control review and as part of RIIO-GD1. In particular we flagged our concerns about the quality of data held by GDNs on assets other than iron mains data.

10.5. We indicated we expect the GDNs to develop their approach to asset management by capturing much more information across a range of assets including information associated with asset health, how the assets deteriorate and the criticality of those assets in terms of the safety, reliability and environmental consequences if they fail. The evidence would be required to support the companies'

well justified business plan submissions especially since the GDN indicative forecasts for the first five years of RIIO-GD1 had all highlighted a significant move to expenditure driven by network integrity and condition.

10.6. We set out how asset health, criticality and risk indices provides a framework for collating information on the health (or condition) of assets and their relative importance and resulting level of risk. We explained how this could be used to track forecast changes in network health, criticality and risk over time both with and without investment.

10.7. Our consultation proposal was that we should apply an incentive framework to secondary deliverables that requires the GDNs to demonstrate how their expenditure is linked to managing network risk at both the beginning and end of the price control period. This involved the GDNs setting out risk indices for each of their major asset types as they stand currently, and as forecast for both the middle and end of the price control period with and without intervention. We would then undertake a performance assessment at the end of the price control period to determine whether each GDN has performed satisfactorily in delivering the level of asset network risk it agreed to deliver over the RIIO-GD1 control period.

10.8. We considered that financial incentives should apply in cases where there is material under or over delivery. We sought comment on options for how these incentives could be applied. We also consulted on whether the incentives imposed on secondary deliverables should be symmetric or asymmetric (ie penalty only).

10.9. In our document, we stated that developing output-based regulation is at the heart of our RIIO recommendations, and is crucial to our objectives that network companies should play a full role in the delivery of a sustainable energy sector and provide long term value for money for both existing and future customers. The development of output measures relating to network risk and secondary deliverables relating to asset health and criticality is a key step on this path. We recognised that there currently exist significant limitations to asset condition and criticality data, and that substantial progress needs to be made both during this price control review and as part of the forthcoming price control period.

10.10. We were concerned that, unless there are good output measures in place, an investment programme that seeks to improve the integrity of assets outside the HSE 30:30 repex programme could lead to an increase in costs for consumers without a clear link to the associated benefits and outputs. There is also a danger that companies will not adequately balance and prioritise risk across the various output categories.

10.11. We wanted the GDNs to consider where to invest in their networks to reduce overall risk to consumers and the appropriate investment or replacement priorities. To facilitate this, we proposed to require the GDNs to develop asset health/condition measures, criticality, and risk indices or replacement priorities for all of their assets considering safety, reliability, and environmental factors as well as financial implications, with a view to innovating on risk management techniques wherever necessary. We proposed a well-balanced (holistic) approach to asset risk

management both within and across asset categories, not simply focused on the 30:30 repex programme.

10.12. For the reasons explained above, we proposed asset health and criticality indices (HI, CI) as well as risk indices (RI) or asset replacement priorities (RPs). We have engaged in proactive discussions with GDNs and HSE on this process, and have encouraged GDNs to develop the required systems and outputs that would be required under this approach. We have signalled that, if GDNs are to get the funding for integrity capex highlighted in the recent cost visits, they must put forward appropriate output information and commit to deliver the proposed levels of investment. We have also consulted on the possibility of developing an explicit licence condition in this price control period that places a requirement on GDNs to develop outputs and methodologies for secondary deliverables by asset category. The GDNs are broadly in agreement with this. We have also had early discussions with the HSE on the role of a holistic asset management approach covering a wider range of asset categories.

10.13. We set out arrangements which will give GDNs the flexibility to rebalance expenditure across different assets in order to address risk in the most efficient manner. We noted that if it is not practical for GDNs to establish equivalence of risk across a number of asset categories, GDNs could still make a case for rebalancing their outputs once they have more advanced asset management systems in place. In order to trigger such a reopener, the GDNs would need to demonstrate that they have robust information associated with asset health and criticality, and that they have integrated it within their investment planning framework. They would also need to show that they can deliver a well-justified business plan that provides material benefits to existing and future consumers compared to the existing outputs and baselines.

10.14. We consulted on this in our 16 December 2010 letter to GDN CEOs and have found broad agreement in their responses, subject to the difficulty in obtaining updated and timely condition and criticality data for a relatively limited number of asset categories. The other case in which a significant re-balancing in outputs might lead us to consider triggering a re-opener to the price control is related to the possibility that the HSE will agree, following its review, a material change to the repex programme with the GDNs.

Summary of responses

Mains Replacement

10.15. In principle the GDNs and HSE supported the proposal to introduce a primary output based on risk removed and an associated revenue driver for the 30:30 repex programme. However a number of the GDNs raised practical concerns with the development of this approach due to the modelling of network risk, stating that the replacement programme is based on a prioritisation process rather than an absolute mechanism. Another GDN also expressed the concern that moving to a risk removed approach for mains replacement in RIIO-GD1 might lead to gaming, as companies could replace much smaller lengths of pipe to remove the risk. A number of GDNs stated they would work with Ofgem to further develop the proposal.

10.16. In reviewing historical information for 2008-09 and 2009-10 the impact of the risk removed from the network purely due to GDN intervention is difficult to identify. This is partly due to the increase in the risk scores caused by dynamic growth (explained below) and partly because limited information has been kept on the risk associated with individual pipes that have been abandoned.

10.17. The risk score of a pipe is calculated from a wide range of factors including:

- key attributes related to the pipe such as material, diameter, length
- maintenance history associated with the pipe (specifically previous fractures, corrosion and Gas in Buildings occurrences)
- topographical surveys undertaken along the length of each pipe to identify the length of open ground and the presence of cellars.

10.18. These factors are not static and therefore the risk score is subject to change (dynamic growth) as new information is introduced into the MRPS model, these include:

- changes to the pipe asset repository including:
 - attribute updates via Digital Records 4 (DR4) process either by found assets or record updates
 - change in pipe status ie Live pipe to abandoned pipe.
- MRPS updates including:
 - MRPS coefficient updates
 - background zone updates.
- change in maintenance history relating to fracture, corrosion and GIB data, and
- topographical changes where new buildings encroach to within 30-metres or buildings are demolished.

10.19. The GDNs have a process that updates and validates all of these data changes. Some of these are managed on a daily basis whereas others are on a periodic review basis. The risk score of an asset may change for a number of reasons and a primary output based on the risk score is potentially open to these changes.

Asset Health

10.20. In addition to the December consultation document we issued a letter to the GDNs on 16 December 2010 in which we asked them to set out the work they had already undertaken, and were planning to undertake with regards to developing asset health proposals. This section combines the response to our consultation document and letter.

10.21. All GDN owners recognised the importance of effective asset management and supported our proposed approach to the development of asset health and risk metrics. One GDN highlighted they currently operate a broader approach to asset management, which is regularly tested and approved under PAS-55.

10.22. Whilst GDNs supported the approach to holistic asset management across assets, two GDNs indicated the costs associated with the significant data collection

and validation that would be required. Another GDN noted that developing and populating asset health metrics may extend into the next price control period and therefore a phased implementation would be appropriate.

10.23. There are some concerns about the extent of data availability for the start of RIIO-GD1. Some respondents claimed that the assets for which data are currently unavailable will take longer than 36 months to collect, including distribution services, block valves, special crossings, pig traps, other sleeves, and service governors. Other asset categories do not seem to present extreme data problems.

10.24. Nonetheless, there is general agreement amongst GDNs that the timing of data collection should be compatible with the RIIO-GD1 mid-period review.

10.25. A number of GDNs highlighted that they are already making risk trade-offs across asset groups, not just limited to the 30:30 repex programme.

10.26. One of the GDN respondents considered it would be inappropriate if Condition Based Risk Management (CBRM) methodology was applied to all assets and that specific decision support tools would be required for different asset classes eg holders. Another GDN argued that Ofgem's proposal in the December document was too simplistic and that further work would be required on the definitions and development of health and criticality indices to facilitate any cross asset comparisons.

10.27. One of the GDN respondents proposed that criticality should be linked to security of supply and the loss of supply impact of a particular asset.

10.28. One GDN suggested a CBRM approach rather than a simple asset health index approach, developed in conjunction with consultants and also looking at best practice in other network industries. The main reason for this proposal is the capability of a CBRM approach to link asset health and criticality more strictly to each other and to consider the joint consequences of asset failure in terms of safety, security of supply, environment, and financial implications.

10.29. The company says it has undertaken significant work in the area of asset management over the past 18 months. This GDN is currently developing a detailed asset data strategy to account for system improvements - this includes extensive asset data validation by category.

10.30. More than one GDN also proposes postcode analysis of service leakage. They supported the use of criticality indices, although - they would prefer a full CBRM approach to a relatively simpler set of asset health metrics.

10.31. One of the GDNs has developed a multi-factor approach that considers: (a) asset condition; (b) asset environment; (c) the activity undertaken by the asset; (d) the expected life of the asset; and (e) its fault history. It currently covers a proportion of the asset classes and is based on a sample of the assets which have been surveyed to-date.

10.32. Probabilities of failure are predicted based on these factors, as well as known asset failure rates associated with each asset type. Subsequently, the model considers the consequence of failure in terms of both operating and societal costs. The consequences of failure are assessed and, where possible, monetised from a safety, financial, security of supply, and environmental standpoint. Safety consequences are based on values of lost life or injury. Financial consequences are evaluated based on internal repair costs and include any compensation payments. Security of supply consequences are calculated based on kWh of energy not supplied, either on a loss-of-GDP basis (industrial and commercial customers) or on an arbitrage basis (difference between retail gas and electricity prices to evaluate forced shift to electricity). Finally, environmental consequences are calculated on the basis of the shadow cost of carbon. Assuming risk is quantifiable and monetised (as the product of asset failure probability and consequences of failure/criticality), the next step is a calculation to arrive at a discounted cash cost value which must then be linked to the benefit of asset replacement and, at least ideally, arrive at the quantification of an optimum time for intervention. This model shows a commendable approach, although a greater understanding is needed of its practicability and how long it will take to apply more generally.

10.33. Several GDNs raised concerns about trading risk between assets in view of the safety obligations they face. One GDN stated that it understands the principles underlying our proposed cross-asset risk management approach, but expressed concerns about whether this can be achieved given the safety requirements to ensure that all assets are appropriately maintained and that they have to adopt an approach of doing everything that is reasonably practicable.

10.34. GDNs support, in principle, a licence condition to mandate the provision of asset management information and the provision of condition/criticality/risk matrices. This data will inform the regulatory assessment of reliability related secondary deliverables in RIIO-GD1, mindful of short-run data availability issues. The companies would like to be fully consulted on this process.

10.35. There is a general agreement that output data should be comparable across GDNs, and that the asset matrices we proposed in the December document (and re-iterated at recent working group meetings in January and February 2011) will satisfy this requirement.

10.36. GDNs were generally happy with our proposed general asset health/criticality matrix to generate risk indices, although some of them proposed a slightly different skew in the matrix, away from the health index and more balanced towards criticality.

10.37. The companies suggest a few amendments to our list of proposed asset categories for the measurement of reliability-related secondary deliverables. For example, one company proposed to remove telemetry and control on materiality grounds (but note that these might or might not apply to other GDNs) and to include offtake metering systems instead, together with Liquefied Natural Gas (LNG) storage and distribution facilities. They also proposed a clearer definition of gas holders (whether by site or by individual holder). Similar definitional issues were raised with

respect to gas risers (in relation to the configuration of, and distance from, buildings).

10.38. One of the GDNs is also in favour of a relatively consistent process for assessing health and criticality indices across assets, because such a strategy would allow effective comparisons between different asset categories. Data wise, the primary asset repositories utilised by the GDNs tends to be consistent with similar systems used in other network industries. Based on failure rates, inspection data, and network analysis models, one of the GDNs claimed that the existing asset repositories are able to generate risk scores at least for distribution mains.

Summary of decision

10.39. We have decided that there should be a primary output based on network risk removed. We consider that this will provide appropriate incentives for companies to efficiently manage risk on their network. It also encourages the GDNs to develop alternative approaches to removing risk such as spray lining or inserting sheaths within pipes. Ideally this measure would look to encompass all assets but there is limited data available.

10.40. Our initial discussions with the HSE based on the results of CEPA's work (discussed further below) suggest that there could be a moratorium on the replacement of large diameter mains until there is further evidence on their failure mode. As such our network risk measure will initially focus on iron mains and associated service replacement excluding larger diameter mains. These form the core elements of the replacement programme. We are considering whether the risk output should be linked to the likelihood of an incident²¹ or alternatively an output focussed on the expected number of gas in building events which is also estimated by the MPRS.

10.41. If the GDNs are able to demonstrate in their well justified business plans that there is appropriate justification for carrying out work on other assets such as large diameter mains, service governors or risers, we will consider setting an additional allowance associated with these and including them in our cost baselines and the risk mechanism for the start of RIIO-GD1. We will introduce a mechanism which will allow the GDNs to substitute expenditure across asset categories outside the core replacement programme as and when the associated data is available. In the longer-term we consider that there would be benefits of trading risk more broadly across asset classes. The change in treatment for larger diameter mains will provide an opportunity for the GDNs to consider how they trade-off risk across assets.

10.42. We are planning for a new licence condition to be included in the GT licence for GDNs to gather and report information on asset health, criticality and risk associated with other assets. The new condition will be added into the existing licence conditions shortly (to commence in the current price control period). We will follow due process in introducing the licence condition and consult fully with the

²¹ An incident means an iron mains gas failure that leads to injuries, fatalities or damage to buildings. This current definition of risk in the MPRS is the forecast number of incidents per year.

GDNs²². These information requirements are explained in further detail later in the chapter.

10.43. We note the GDNs' concerns about trading risk between assets in view of their safety obligations they face, and the requirements to ensure that all assets are appropriately maintained. To meet these obligations the GDNs state they have to adopt an approach of doing everything that is reasonably practicable. However, we need to be assured that the GDNs make the most cost-effective managed response to meeting their obligations rather than just relying on replacement of the asset where the financial cost may be unnecessarily high.

CEPA report on the mains replacement programme

10.44. CEPA is currently contracted by the HSE and Ofgem to review the effectiveness of the iron mains replacement programme (IMRP) to date in removing risk, carry out cost-benefit analysis on alternative options for the programme going forwards and to consider whether the programme is proportionate to the degree of risk involved. This work is due to be concluded by the end of March, after which the HSE will consider the evidence and any recommendations. The early results of this work raises questions on some key elements of the current iron mains programme, in particular whether large diameter iron mains are affected by the same failure mechanisms as smaller diameter mains and therefore whether they should be included in the programme in the same way. They also raise concerns that risk has not been adequately targeted to date and that there may be merit in adopting an approach which is more directly targeted on the highest risk mains.

10.45. The cost-benefit analysis that they have carried out suggests that, rather than the risk removed, the overwhelming majority of benefits from the mains replacement programme relate to reduced leakage and environmental emissions and lower costs associated with emergencies and repairs.

10.46. CEPA have also highlighted concerns about the robustness of the MRPS model. They highlight that the model is effective in predicting gas in buildings and escapes but is less robust in predicting the number of incidents due to the low volume of such events. They suggest that further work is needed to develop the model and make most effective use of the available data, including possibly placing greater weight on the consequence of incidents. They also raise issues with how the model has been applied in practice and whether sufficient risk has been removed in line with the top-down element of an 20:80 zonal or 20:70:10 model. They raise concerns as to whether there is sufficient condition information with regards to unprotected steel in multiple occupancy buildings.

10.47. The results of CEPA's work and the HSE's subsequent decisions may have significant impacts on the form of the mains replacement programme. Our early

²² DECC is currently consulting on changes to licence modification procedures that will flow from implementation of the EU Third Internal Energy Package (see <http://www.decc.gov.uk/assets/decc/Consultations/eu-third-package/586-eu-third-package-condoc2.pdf>). Once implemented, licence modification procedures will differ from those in place at the moment, but will still include provisions for consultation.

discussions with the HSE suggest that from 2013 there could be a moratorium on the replacement of large diameter mains until there is further evidence on the degree of risk they generate and their failure modes. The HSE also anticipate initiating a wider consultation with regard to the future of the repex programme. They intend to consult on whether they should remove the current legal framework governing iron mains, and instead, replace this with a broader requirement on GDNs to achieve a safe network "so far as reasonably practicable". This would involve GDNs ensuring they consider the risks across all assets in forming their investment programme. In addition this would consider whether the safety element of the programme should be focussed on a limited quantity of the highest risk pipes, with other replacement work being driven through other price control incentives such as on shrinkage. Arriving at this new position will require significant further work and the HSE does not expect new arrangements to be in place in time for the start of RIIO-GD1. As discussed later in this chapter we will introduce a mechanism to allow the GDNs to respond to changes to the repex programme within the next price control period.

Setting allowances and outputs for risk associated with the main replacement programme

10.48. We will set an ex ante baseline level of costs and outputs for network risk associated with the mains replacement programme. This will be calibrated based on an understanding of the costs associated with removing different lengths of iron mains and the relationship between length and risk removed.

10.49. The GDNs currently report on length of mains laid and the associated costs, hence we have a good understanding of the relationship between length and cost over time, but we may not be able to fully understand the relationship between costs and risk for the whole forecast period. We expect to have a rolling approach to the risk removed target to allow for dynamic growth and for updated information on the relationship between costs of mains removed and risk removed. This will also mean that the unit costs for risk removed will need to be updated on a similar basis.

10.50. We are considering whether it is appropriate to place a cap on expenditure associated with risk management. We would determine such a cap on the basis of the forecast volume of risk removed/mains abandoned and associated service replacement which is planned to be delivered under the core HSE required element of the programme. The value of the cap would be consistent with sufficient resource to allow GDNs to discharge their relevant health and safety duties.

10.51. If our risk outputs are extended to include other assets it would potentially incorporate forecast costs associated with these as well.

10.52. We are also considering how best to place incentives on under and over delivery in relation to network risk. One option is to follow a similar approach to that put forward for capacity in the previous chapter and asset health and criticality later in this chapter. If companies do not deliver the agreed removal of risk in this price control period they will be held to the delivery of these outputs in the following price control period. If they remove more risk and this is demonstrated to be efficient and in the interest of consumers they could be funded for this in the following price control period, subject to any cap on funding. If companies under deliver they would

also face an adjustment to allowed revenues which is marginally greater than the financing cost benefit for deferment to ensure they have an incentive to deliver rather than defer work. Similarly, if they remove more risk they would receive a financial adjustment marginally less than the cost of bringing the work forwards to ensure that they carefully consider the benefits of delivering additional outputs.

10.53. Alternatively we could value the gap between the ex ante agreed output and what is actually delivered in a manner similar to the DPCR5 network health output or put in place an ex ante revenue driver that adjusts companies' allowed revenues for the level of risk removed in each given year. Either approach requires an understanding of the unit costs of risk removal.

10.54. Given some of the concerns over the dynamic nature of risk and uncertainty over the relationship between costs and risk removed we are considering whether it is appropriate to set caps and collars on the degree of out or underperformance under the repex incentives. We also consider that it would be appropriate to place a total cost limit over the full price control review period if we adopt a revenue driver approach.

10.55. Overall, there are a number of options which we are considering for the approach to managing cost baselines for repex and the associated outputs. We will continue to work with the GDNs, HSE and other stakeholders over the coming months on the following options:

- whether the risks targets should be updated during the period taking into account the developing relationship between network length and risk removed
- whether we need to include a revenue driver as well as the ex ante allowance to deal with the variations in the proposed levels of risk to be removed and potential changes in diameters of the workload mix required by replacement programme agreed with the HSE which have a material impact on the overall costs of the work
- whether the costs of addressing services should be included in the mechanism or whether they should be dealt with separately potentially by applying a revenue driver based on the number of different categories of services replaced
- whether it is appropriate to introduce caps and collars.

Scenario for the well justified business plan and uncertainty mechanisms

10.56. Based on the discussions set out above the GDNs should prepare their forecasts on the basis that the repex programme will continue on an as-is basis but excluding the requirement for the replacement of large diameter mains.

10.57. At this stage of the review the definition of large diameter mains is still being considered. We will continue to work with the HSE and GDNs during April to finalise the diameter cut off so that the GDNs can plan the core 30:30 programme agreed between the GDNs and the HSE.

10.58. The HSE has indicated it will consider alternative approaches to large diameter mains replacement once they have solid evidence to identify the right cut-

off point. One potential option could be a moratorium on the >12" mains based on the need for further information on these assets. We consider setting the cut off at >8" provides an opportunity to understand how GDNs will plan and prioritise their work outside of the core HSE requirements under the 30:30 programme. In setting the diameter of the repex programme at a lower level it provides more scope to the GDN operators to design more efficient programmes of work on a holistic approach. We note that GDNs will have the opportunity to make a case for additional baseline funding both associated with larger diameters and other assets. They will also have the opportunity to undertake work to respond to incentives such as the shrinkage and environmental emissions incentive and incentives on operational costs such as emergencies and repairs.

10.59. CEPA raise questions about the robustness of the MRPS model and we will consider in conjunction with the HSE whether any amendments are needed. We will use the existing model as the starting point for our output measures, ex ante allowances and any revenue driver on risk, but we will continue to work with the HSE and the GDNs to ensure further developments are made to the model to make it more robust.

10.60. We will include an uncertainty mechanism within the price control that addresses several areas of potential change.

- If the GDNs can appropriately demonstrate that risk removal on other assets is of equal or greater benefit to consumers as risk removal associated with work on non-core assets included in our cost baseline, we will allow them to substitute some of this work for the level of non-core risk agreed in their baseline. Under this approach our price control cost baselines would remain unchanged and the GDNs would continue to retain a share of any cost benefits associated with the substitution under the cost sharing factors.
- If it is not practical for GDNs to demonstrate equivalence of risk across a number of classes the GDNs could still make a case for rebalancing the outputs once they have more advanced asset management systems in place, and assuming it is supported by the evidence and is agreed with the HSE. In order to trigger such a reopener the GDNs will need to demonstrate that they have robust information associated with asset health and criticality and have integrated it with their planning. They will need to show that they can deliver a plan that delivers material benefits to consumers.
- If there are material changes to the MRPS model we would look to make changes to the associated output targets that relate to the redefinition of the MRPS.
- We would allow both ourselves and the GDNs to trigger a reopener if there is a material change to the mains replacement programme following the ongoing review by the HSE. A material change is one which increases or reduces GDN costs by more than 1 per cent of the allowed expenditure after application of the IQI.

10.61. As stated in Chapter three if the HSE review results in a significant change to the repex programme then we will also look to review the shrinkage and leakage baselines and re-set baselines where appropriate.

Asset health, criticality and network risk

10.62. We welcome the consultation responses and further details from the GDNs in terms of asset risk management processes they currently employ in their networks and their specific proposals to develop these going forwards.

10.63. Our overall decision is unchanged from our consultation proposal, to put in place asset health, criticality and risk indices as secondary deliverables. We intend to introduce a new gas distribution licence condition before the RIIO-GD1 period begins mandating the development of asset health and criticality indicators. This condition should speed up the development and upgrading of GDN asset management data systems, as well as the effective migration and mapping of low-level secondary data into main asset registers and primary data repositories. We would expect much of the development work to focus on asset other than iron mains which are currently captured in the MPRS. However, there should also be opportunities to improve information for iron mains assets.

10.64. The asset health and risk measures' secondary deliverables will ensure that any risk to delivery of a number of the proposed primary outputs is managed and that GDNs will deliver long-term value for money for existing and future customers. As per electricity distribution (DPCR5) and the proposals for the transmission companies (RIIO-T1), we consider that in the long term, the GDNs should pursue a system-wide risk assessment for justifying investment in assets that impact on the reliability and safety of the network or the environment.

10.65. A health index provides a framework for collating information on the health (or condition) of network assets. Criticality provides a measure of the consequence of failure of assets typically measured in terms of system, safety and the environmental implications. By combining asset health and criticality, GDNs can develop risk indices that determine capital replacement priorities.

10.66. We provide further guidance notes for the GDNs on the quantification of output measures related to RIIO-GD1 secondary deliverables to be reported in the asset health/condition and criticality matrices to generate risk indices in Appendix two to this document. The GDNs will be expected to use best endeavours to fill in our asset management data tables (health, criticality, risk indices) for their well justified business plans. We recognise that there will be some areas where the information will not be available or estimates will have to be made, but the extent to which this is completed will inform our proportionate treatment.

10.67. We are not against different choices (by GDN) on how they combine asset health and criticality to establish risk indices. However, such choices should be explained and documented and then agreed with Ofgem.

Setting incentives on secondary deliverables

10.68. We consider that it is appropriate to apply a symmetric approach for over and under delivery of the secondary deliverables. Network companies should be able to recover their share of the over spend (under the IQI incentives) relating to over delivery if they can demonstrate this is positively valued by customers, and that the costs incurred were efficient. Similarly, if companies have under delivered they should be held to funding the delivery of the output gap in the following period. We considered three options:

- The DPCR5 approach, but focusing on replacement priorities or risk rather than asset health/condition. In DPCR5, we developed a methodology for determining the financial consequences for a DNO which we qualitatively deemed not to have met its output level requirements. The incentive was focussed on the 'network outputs gap' concept, and we applied an incentive rate to the network outputs gap to calculate a revenue adjustment at DPCR6.
- The DPCR5 approach, amended to become symmetric. This option would introduce a reward for over delivery, which would potentially be symmetric in terms of the sharing rate, and would be subject to a "customer test". A significant advantage of this approach is that a reward would allow companies the flexibility to carry out additional investment to reduce risk if this is in the interest of consumers. One drawback of the symmetric approach is that it might incentivise network companies to systematically over deliver, unless the consumer test was very well-defined.
- Carrying forward the agreed baseline outputs/secondary deliverables to the next control period. Under this option, any under delivery or over performance is taken into account. As part of the business planning process for the next price control review, the companies will need to demonstrate that the extra work is justified and is in the interest of consumers.

10.69. On balance, we have decided to pursue option 3 above. Our view is that with this option the 'customer test' is still present, but it becomes part of a structured process (the overall business planning exercise for the following review) rather than on a case by case basis. Under this option, outputs will be carried forward as agreed, with any output gap calculated in a similar way to DPCR5.

10.70. Until full delivery is reached in the following price control period, the financial difference resulting from the output gap would fall on the GDNs rather than on customers. Although the agreed level of outputs at the end of RIIO-GD1 will form the starting point for RIIO-GD2, we note that a financial adjustment will be required to allow for the difference in financing costs associated with under or over delivery. We will apply a revenue reduction marginally greater than the financing costs associated with under delivery against agreed levels to ensure that there is not an incentive for the GDNs to under deliver. Similarly, we will apply a revenue increase marginally less than the financing costs associated with over delivery to ensure that companies give careful consideration to the benefits that a higher level of outputs will bring to consumers.

Appendices

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Appendix 1 - Consultation questions and responses

1.1. Responses received by Ofgem which were not marked as being confidential have been published on Ofgem's website www.ofgem.gov.uk. Copies of non-confidential responses are also available from Ofgem's library.

1.2. The following is a summary of those responses which were received.

Chapter 1 - Introduction

Question 1: We would welcome respondents' views on the approach we have taken to develop the outputs framework.

1.3. Most respondents supported our approach to the development of the outputs framework. In particular, respondents welcomed the development of the output measures through the use of the working groups, comprising both network companies and wider stakeholder groups.

1.4. A number of the respondents noted that the timetable for the development of the outputs and incentives had been relatively tight, and that we in conjunction with the industry would need to continue develop the outputs package post-March. GDNs also noted that their stakeholder engagement process was on-going, and that our decisions in March should be sufficiently flexible to accommodate their stakeholder views on the outputs package.

1.5. The GDNs also considered that further work was required on associated incentive mechanisms. In particular, they considered that the incentive framework needed to be strengthened to provide greater incentives for outperformance.

Question 2: Do any of our proposed output measures present potential difficulties in ensuring the submission of accurate and comparable data?

1.6. No respondent identified difficulties with any specific output measure or reporting requirement. A number of GDNs commented that they could not fully respond to this question until the output measures were further refined.

1.7. The respondents noted that we should ensure the proposed outputs measure fulfil the relevant criteria (ie controllable, auditable, comparable etc) to ensure the GDNs can submit accurate and comparable data. One respondent also asked us to consider the benefits of allowing tolerances for certain commitments in the RIGs, to ensure a proportionate approach to reporting. Another respondent stated that we would need to allow network companies time to capture the data required by the new outputs framework.

Question 3: Are there any aspects of our proposed framework where the reporting requirements are likely to lead to disproportionate regulatory costs?

1.8. In general, the network companies re-iterated the points they made in response to question 2: that there were no specific problems with the December proposals; they require further details to respond to this question; and, that we should ensure a proportionate approach to reporting. One respondent cited the UK water sector as providing a useful example in this regard.

Question 4: Should we introduce an independent examiner for all companies to improve regulatory reporting?

1.9. One network company considered that the system of appointing independent examiners in the water sector had not worked well, and should not be adopted in the energy sector. Two network companies considered that an independent examiner could be useful but also highlighted reservations. These reservations included the concerns about cost; their ability to complete a full compliance check; and the absence of a defined materiality test for regulatory reporting requirements. One respondent considered that well defined outputs and existing governance arrangements presented the optimal solution.

Question 5: Do you have any views on our proposed approach to revising outputs?

1.10. Most respondents agreed to our approach to limiting the scope for adjusting outputs at the mid-term review to changes required by legislation or government policy, and to new output measures.

1.11. One GDN noted that the outputs package is an essential part of their acceptance of the overall regulatory package, and therefore we should exercise caution in making any changes. Another GDN noted that changes in the output measures in relation to 'unfit measurement' or 'reporting' issues should be picked-up through the development of the regulatory instructions and guidance (RIGs).

Chapter 2 - Environmental impacts

Question 1: Do you agree with our proposal to require GDNs to report the capacity of bio-methane connected as a broad measure of environmental impact but not to adopt an associated financial reward/penalty?

1.12. Respondents generally agreed with the proposal to report on capacity of bio-methane connected as a broad measure, while one network company felt that the measure should apply to all distributed gas not just bio-methane.

1.13. Network companies proposed that the measure should be expanded to include reporting on capacity of bio-methane being considered through enquiries and applications in progress, but not yet connected.

1.14. Network companies agreed that no financial incentives could be attached to the capacity of bio-methane connected as it is not sufficiently within their control, although one network user expressed the opinion that non-financial incentives would not encourage deployment of bio-methane connections.

1.15. Network companies argued that since the capacity of bio-methane connected is at least partially outside of the companies' control, a league table is not appropriate. An alternative suggestion was put forward to publish an annual table showing total capacity connected year on year for all GDNs, giving an indication of progress towards achieving the governments' low carbon targets.

1.16. There were differing opinions regarding associated financial rewards.

- Some network companies, network users and other respondents felt that stronger financial incentives were required for broader environmental initiatives, not limited to bio-methane connection, and proposed retaining a discretionary reward scheme which could be used to reward companies who are seen to have been contributing positively to the broad environmental objective throughout the price control period.
- One consumer group specifically did not support the RenewableUK proposal contained in the RIIO-T1 December document, given the differences between the distribution and transmission networks, and felt it was not sufficiently measurable or controllable and that any incentive would need to be symmetrical.
- A number of GDNs, network users and consumer groups felt strongly that no financial incentives should be applied, citing existing environmental initiatives and lack of controllability.

Question 2: Is there any other measure of environmental impact which you believe could be financially incentivised, bearing in mind the need for an output to be measurable and controllable by the GDNs?

1.17. No respondent put forward any other environmental measure which was sufficiently measurable and controllable by the companies to be financially incentivised. One network company expressed the opinion that the use of recycling facilities was currently not sufficiently incentivised to be viable, and one environmental group discussed promoting dual fuel transport through some incentives.

Question 3: We would welcome respondents' views on the expected take-up of bio-methane following the introduction of the Renewable Heat Incentive (RHI).

1.18. Respondents found it difficult to predict the potential uptake of bio-methane without knowing the value of the RHI. Two respondents (one network company and a supplier) estimated the take up of bio-methane to be in the region of 170 TWh per year by 2020. Another network company stated they had received 17 expressions of interest. One respondent stated the RHI will have no impact on the uptake of bio-methane connections. One trade association stated the cost of the injection equipment will need to reduce for bio-methane to make a greater contribution to the low carbon economy.

Question 4: Are there any wider-network benefits associated with bio-methane which might imply that we need to change the current connection charging boundary?

1.19. Some network companies identified benefits of bio-methane to the network. These were that it may improve security of supply, reduce the reliance on the NTS and will prolong the use of gas on the network. One network company argued there are wider benefits of bio-methane such as preventing the need to reinforce the electricity distribution network.

1.20. One network company stated that bio-methane connection may help enable carbon capture and storage upstream on the NTS network, thereby providing wider benefits.

Question 5: We would welcome respondents' views on our proposed approach not to recover connection and downstream asset costs through general network charges. In particular, we would like to hear views on the potential rationale for socialising the costs of connecting bio-methane plant, and how we might be able to do this within our vires.

1.21. One network company proposed that the boundary be moved to a super shallow connection boundary where the costs of injecting gas into the network are socialised through transportation charges. Other network companies proposed that bio-methane site assets should be treated the same as network entry points from the NTS network. One network company suggested the connection assets are treated the same as those on the electricity distribution network so sites who choose to produce electricity from biogas are not treated differently.

1.22. Two respondents suggested that we focus on reducing the cost of the injection equipment. The network companies argued that we should socialise the costs of connection. Whereas one consumer body argued they have not seen any evidence for subsidising the connection costs for these customers.

Question 6: Do you agree with our proposed approach of logging-up costs associated with bio-methane connections in the event that the connection boundary changes

1.23. Most of the respondents did not favour option one of logging up the connection costs over the price review period. They considered it would place too much risk on them as the costs they may incur are uncertain. They favoured option two. Two network companies suggested that the incentive mechanism under option two could be developed over the price control period.

Question 7: Are there other issues we should be considering for the price control in relation to distributed gas (predominately bio-methane)?

1.24. Two respondents suggested simplifying the specification for the injection equipment. One environmental group suggested changing the Gas Thermal Energy Regulations for bio-methane connections. One network company suggested GDNs should be given an incentive to blend bio-methane to meet gas quality requirements.

1.25. Two network companies suggested stronger incentives are provided for them to support bio-methane connections. Examples include model contracts and

procedures for assessing available capacity. Another network company stated we should consider coal bed methane in any proposals.

Question 8: what information would distributed gas users find useful to help them connect?

1.26. The network companies suggested information on available capacity and the nearest point of connection would be helpful for prospective entry customers. One network company suggested developing a connection guide for bio-methane and adopting a bespoke connection process.

1.27. One network company did not consider it necessary to introduce a licence condition on the GDNs to provide information on how to connect. One network user does not consider it technically or financially possible to connect therefore they do not consider there is a benefit of developing an information requirement.

Question 9: Do you agree with our proposal to broadly continue with the shrinkage allowance mechanism and Environmental Emissions Incentive (EEI) adopted at GDPCR?

1.28. There was unanimous support amongst network companies to continue with the shrinkage allowance mechanism and the Environmental Emissions Incentive. They commented that they would continue to provide benefit to customers provided that the cost of carbon and the cost of energy continued to be appropriately valued and accordingly recovered.

1.29. A consumer group also agreed with the proposed mechanisms on the basis that the modelling and forecasting can adequately prevent GDNs from earning an excessive rate of return on overly large allowances.

Question 10: Do you agree with our proposed change to the valuation of carbon for the EEI to bring it in line with DECC's recommended approach?

1.30. Network companies commented that an increase in the value of the incentive would facilitate greater leakage reductions. One network company commented that the value of the EEI should be updated whenever DECC revise its non traded carbon values.

Question 11: Should we retain a cap and collar on the EEI and at what level should any cap and collar be set? Should we introduce a cap and collar on the shrinkage incentive mechanism, and if so, at what level should any cap and collar be set?

1.31. A customer group highlighted that there was a need to prevent windfall gains and losses due to forecasting uncertainty but recognised the need to provide incentives for companies to deliver in an efficient manner. They recommended a compromise whereby caps and collars are retained but are increased.

1.32. Network companies were in general agreement that caps and collars should not be introduced for the shrinkage incentive mechanism. They commented that any

uncertainty around the repex programme should be dealt with through uncertainty mechanisms and not a cap and collar. Further, one network company added that caps and collars aimed solely at volume performance would not have the desired effect on the shrinkage incentive since it is driven by both commodity gas price and volumes.

1.33. Network companies had mixed views over the need for a cap and collar on the EEI. One commented that a volume based cap and collar continues to be required to reflect ongoing uncertainty. Two other companies commented that there was a strong logic to removing cap and collars altogether since any uncertainty in this area had been removed with Ofgem's approval of the leakage model²³. They also commented that companies should be incentivised to reduce the environmental impact of leakage wherever possible. One of these companies stated that if complete removal of cap and collars was not possible then the cap and collars should be increased to 20 per cent. The remaining network company also supported an expansion to the existing 10 per cent cap and collar.

Question 12: Do you agree with our proposal not to adopt a rolling-incentive mechanism for the EEI mechanism?

1.34. There was a mixed response from Network companies to this question. Two commented that Ofgem should look to introduce a rolling incentive mechanism for the EEI. They acknowledged that this may be difficult but felt it was important to enable companies to realise the benefits of investment or improved network management over an extended price control period. They identified that the working group should develop a common methodology for the rolling incentive or that forecast baselines could be reviewed at the mid period review.

1.35. The two other network companies did not consider that a rolling incentive mechanism was required. One commented that they felt it would be too complex and that the leakage model could be adjusted to recognise the benefits of investments in future price controls.

Question 13: Do you agree with our proposal to require GDNs to report actual shrinkage data when the relevant data becomes available, with the intention that we will use actual shrinkage as the basis for the shrinkage allowance and EEI at future reviews?

1.36. A supplier fully supported our proposal to use actual shrinkage data at future price controls once smart meters are introduced. They commented that it was imperative that Ofgem moved to an actual shrinkage measure as smart meters are rolled out. A customer group also supported the move providing that it was practical. One network company also commented that use of actual data clearly improves on the existing basis of shrinkage gas reporting but commented that this would not be possible until smart metering data was available.

1.37. The remaining network companies expressed concern over the timing of when smart metering data would become available with one commenting that it would not

²³ Ofgem undertook a review of the model (version 1.3) and approved it in November 2009.

be available until 2020-21. One company commented that the data from smart metering may not enable GDNs to calculate actual shrinkage since some adjustment would need to be made to actual data to take account of theft. They added that the quantity of theft is currently unknown. Another company commented that in place of a requirement to use actual data, what was needed in RIIO GD1 was an obligation to ensure that GDNs have access to smart metering data and assess the quality of that data.

Question 14: Do you agree with our proposals to require GDNs to establish a code of practice outlining how they will identify and process unregistered sites? Do you agree with our proposals to require GDNs to report annually on the number of unregistered sites they have processed?

1.38. A supplier highlighted that GDNs currently lack incentives to address unregistered sites under the shrinkage regime. They consequently welcomed our proposal to introduce a code of practice but also commented that there was scope for regulatory obligations and/or financial incentives in this area including a success fee. A customer group also welcomed the proposed approach as a sensible way to allow GDNs to understand and tackle lost gas.

1.39. Two network companies acknowledged the need for an industry wide solution to deal with the issue of unregistered sites. One company commented that they would not be opposed to the introduction of a code of practice although another commented that it was not clear, at this point in time, what obligations a code of practice would place on network companies. All network companies commented that an industry working group was a better avenue through which to deal with issues around unregistered sites. One GDN commented that it would be inappropriate to place extra obligations on GDNs and not suppliers and shippers.

Question 15: Do you agree with our proposal to publish companies' business carbon footprint (BCF) as a league table to provide reputational incentives but not to provide an associated financial penalty/reward?

1.40. Network companies agreed with publishing BCF as a league table with an associated reputational incentive. One network company disputed the scope and materiality of existing incentives. One network user and other respondents stated they did not believe reputational incentives work effectively. Some suggested that financial incentives could be strengthened, with one network company suggesting extending the EEI mechanism to cover BCF, once consistent reporting of the BCF was established.

1.41. GDNs and network users supported the proposal to fund well-justified schemes, although caution was expressed by one network user on the value for money criterion to be used.

1.42. GDNs and some network users supported the reputational incentive through the use of a league table, although one network user expressed a dissenting view that only financial incentives would influence carbon reduction. Network companies highlighted that the league table would need to factor in trends of reducing carbon

footprint over the past few years (ie different starting points) in order to provide a fair reputational incentive.

Question 16: Do you agree with our proposals to publish other emissions and resource use but not to apply financial rewards/penalties?

1.43. All network companies disagreed with the proposal to report specifically on emissions to water, citing regional differences in legislation. An alternate proposal was put forward to report on company compliance with ISO 14001 which would cover emissions to water as well as a range of other environmental incentives.

1.44. One network company and one consumer group explicitly agreed that there should be no financial rewards/penalties associated with these measures, while one GDN would welcome incentives to fund investment in schemes to reduce other emissions and resource use. Another network company believed a discretionary reward scheme should be retained to cover resource use, while a network user did not believe a reputational incentive would achieve the desired results.

1.45. Network companies supported publishing the data, but expressed concerns regarding practical difficulties such as accurate measurement of some resources such as excavated material to landfill. The issue of proportional effort to potential benefits was raised, including the costs of systems and tools to monitor these reported items.

Chapter 3 - Customer service

Question 1: Are there any aspects of customer service provided by the GDNs not captured by the proposed broad measure?

1.46. One network company recognised the potential for the stakeholder engagement element of the broad measure to encompass service provided to end customers and business to business. Another felt that the customer satisfaction survey should include questions on site tidiness and quality of reinstatement. A consumer group suggested identifying customers who have raised a complaint as a specific group to monitor in the customer satisfaction survey.

1.47. Other responses from network companies criticised the scale and mechanics of the proposed incentive.

Question 2: Other than those specified, are there any other customer-GDN contact experiences that should be captured in the customer satisfaction survey?

1.48. One network company felt the emergency line should be excluded from the incentive mechanism as this was a service provided by National Grid on behalf of all GDNs. Another felt that shippers, suppliers, IGTs and ICPs should be excluded from the survey. Another felt that the stakeholder engagement element of the broad measure needed to be drafted sufficiently widely to include issues around social responsibility.

1.49. A supplier felt that all users of the network should be incorporated into the survey. Amongst other responses, a consumer body wanted connections to be split between customers that had received a quote and those that had actually had work done.

Question 3: Do you agree with our approach to introduce a financial incentive linked to the successful resolution of complaints?

1.50. Three of the network companies expressed concern with the proposed approach. One highlighted that companies that own multiple networks would automatically be exposed to penalties applied to any network that fell outside of the upper quartile of performance. A preference was expressed for an absolute measure of performance, rather than comparing network companies against each other. Another felt the incentive should be greater and include a reward element. An alternate mechanism was suggested incorporating the actual number of complaints per year, the reduction in complaints compared to previous years and a measure of speed of resolution.

1.51. A consumer body agreed with an asymmetric approach, highlighting the perverse incentives that could result from a symmetrical system of rewards and penalties.

1.52. Other comments from networks suggested changing the product weightings from a percentage approach to a number per 100 customers/complaints: this would address the potential for the small number of cases referred to the Ombudsman having an overly significant impact upon overall performance. They also highlighted that using percentages to measure performance introduced the risk that a fall in the volume of complaints may increase the risk of a company receiving a penalty. A consumer body also expressed concern over the incentive calculation incorporating the relatively low volume of complaints that are referred to the Ombudsman.

Question 4: Do you agree with our proposal to introduce a measure associated with resolving complaints alongside the existing guaranteed standards?

1.53. One network company felt that our proposal would subject GDNs to a double penalty. The other network companies and a consumer body agreed with our proposal. There was a general view amongst network companies that the timescales associated with responding to complaints under the guaranteed standards should be utilised in the measure associated with the resolution of complaints.

Question 5: Should we retain the discretionary reward scheme, given our proposed stakeholder engagement mechanism as part of the broad measure?

1.54. A consumer body felt the discretionary reward scheme (DRS) should be retained only where the two schemes are incentivising sufficiently different outcomes and behaviours. Issues relating to fuel poverty and vulnerable customers could be covered by the DRS. One network company felt that stakeholder engagement would

capture all of the existing DRS topics. The other network companies however wanted to retain the DRS.

Question 6: What interest groups should be considered when designing the customer satisfaction surveys and approach to assessing stakeholder engagement activities?

1.55. A consumer body felt we should take into consideration the views of advice agencies and consumer groups dealing with vulnerable consumers. The needs of large energy users should also be taken into account. A network company also suggested using consumer groups. In developing the survey we should involve market research professionals.

Question 7: Do you agree with the proposed size and structure of the financial reward/penalty associated with each element of the broad measure?

1.56. One network company was generally happy with the proposed approach although wanted the mechanism for appraising stakeholder engagement activities to be based upon a detailed understanding of performance. Other network companies wanted a larger asymmetrical incentive that recognises current levels of good performance and the challenge of driving future improvements. There was a sense amongst some networks that the structure of the incentive provided more opportunity for penalty than reward.

1.57. A consumer body felt that the stakeholder engagement element should have penalties as well as rewards attached. If it is asymmetric then they felt the reward should only be set at 0.25 per cent of annual allowed revenues.

Question 8: Will the fact that we will not be consulting on the size of the dead-band before the end of 2011 prove to be a significant issue for companies/showstopper for fast track agreements?

1.58. Two of the network companies felt that sufficient information was already available to be able to establish the dead-band in March 2011. Another expressed the view that delaying the consultation until 2012 was not a show stopper.

Chapter 4 - xoserve

Question 1: Do you agree with the scope and timing of the review?

1.59. Respondents broadly supported the scope and timing of the review. Most of the respondents agreed with the timing of the review given the changes the industry is facing from smart metering. One network company considered detailed work on the review should not take place until the end of the summer when more detail is known on the role of the Data Communications Company (DCC). Another respondent stressed the need for Ofgem to provide clarity on the issues it is seeking to address within the review.

Question 2: Are there any issues with xoserve that we have not considered that you think are relevant?

1.60. One respondent suggested the governance of industry change should be a key consideration of the review. In relation to potential changes one network company suggested an allowance be provided for providing services to the DCC. Another network company suggested simpler cost pass through mechanisms for User Pays may aid the current funding model.

1.61. Another respondent suggested if alternative governance models are reviewed then they recommend the Gemserv model which allows suppliers a level of control. Another non network company response suggested price control revenues should not be used to fund central industry services and instead these should be funded by a direct pass through like the Elexon model in electricity distribution.

Question 3: Do you think xoserve will be able to deliver the requirements for the smart metering programme and Project Nexus?

1.62. Respondents broadly agree that xoserve has a good track record of delivering change and more information is needed on what the requirements of the DCC are to understand what role xoserve can play.

Chapter 5 - Social obligations

Question 1: Is the fuel poor network extension scheme still the most appropriate way to assist the fuel poor?

1.63. Respondents broadly agreed that the fuel poor network extensions scheme was still the most appropriate way of assisting the fuel poor. A consumer body stressed the need to ensure that it remained the cheapest heating solution for vulnerable customers. Another respondent suggested that more support needs to be provided for rural communities.

1.64. Two respondents suggested the scheme should be broadened to take account of the environmental benefits of the scheme.

Question 2: Which is the best mechanism for delivering fuel poor network extensions?

1.65. There was broad support for both funding mechanisms. One consumer body did not support option one as they considered it would be more costly.

1.66. One network company suggested they should be able to choose the most appropriate mechanism. Another network company favoured option one as they argue it provides a stronger incentive mechanism to connect vulnerable customers. One GDN suggested charging vulnerable customers higher transportation charges so more projects could benefit from the scheme. While one network company suggested the alternatives do not improve upon the current scheme.

Question 3: Are there other incentives or mechanisms we could put in place to play a role in delivering non-gas solutions?

1.67. One network company suggested that GDNS may be able to play a role in assisting the development of district heating schemes. While another was happy to explore options with their partners. However, one network company had reservations about assisting with non-gas solutions.

1.68. Non network company responses were positive about network companies playing a role in developing alternative technologies. They agreed alternative heating technologies may provide cheaper heating solutions in the future. One consumer body agreed there is a need to review the scheme in 2014.

Question 4: Is it appropriate to fund GDNs through the price control for their activities in relation to reducing risks of CO poisoning?

1.69. Respondents broadly supported funding GDN activities in relating to CO safety. Network companies highlighted the need to take account of stakeholder engagement feedback before determining the nature of GDN activity, relative to the responsibilities of other organisations. One network company also emphasised the need to take account of legal issues that may be associated with certain activities, such as the distribution of CO safety alarms.

1.70. One network company was keen that any funding mechanism gave a firm indication of the revenue that would be allowed to support activities. This allocation should not be subject to the vagaries of a discretionary reward.

1.71. Non network respondents also supported GDNs playing a role in the area, providing their activities could be measured by outputs. A government body suggested that licence obligations could be amended to increase the time and cost associated with each visit by a First Call Operative (FCO). This would allow for the FCO Operative to carry out any necessary remedial work following detection. The same respondent felt that the type of equipment used to detect CO was a matter for the duty holder based on their own risk assessment. Additional detection should not replace the need for regular maintenance of equipment.

1.72. One network company also identified that the FCO response could test for presence of CO, however this would have implications in terms of equipment provided, training, time on site and changes to IT systems.

Question 5: Are there any identifiable output targets that could be associated with reducing CO poisoning risks?

1.73. Two network respondents did not feel it was appropriate to identify output targets, at least not until funding and liability issues had been resolved.

1.74. One network company wanted to develop Positive Performance Indicators that would support a reduction in risk of injury/fatality. These would include number of

CO visits undertaken and hazards spotted. Another network company provided an expanded list of potential outputs, including:

- number of customers visited and provided with CO literature
- number of customers visited and provided with CO analysis checks
- reduction in number of CO reports.

1.75. A consumer body identified the following as potential outputs:

- number of homes issued with a CO leaflet
- number of vulnerable customers issued with an alarm
- number of home visits by FCO with CO detector indicating clear air
- number of unexpected CO incidents found by detector
- number of calls to emergency line arising from a CO alarm activation.

Question 6: Are there any other social issues for which we should be setting outputs?

1.76. No network company identified any other social issues against which we should be setting outputs. One suggested that the process of stakeholder engagement might highlight other issues for inclusion in the outputs framework.

1.77. A supplier suggested that the GDNs could be required to maintain a register of customers who receive priority services. At present this is held by the supplier, who advises the GDN of a customer's status. If the customer changes supplier however, there is no facility for either the previous supplier or the GDN to advise the new supplier that the customer is eligible for priority services. A consumer group would like natural gas leak alarms to be issued to customers with no sense of smell.

Chapter 6 - Connections

Question 1: Are the current arrangements for charging margins in gas connections appropriate? Is there a need to introduce regulated margins for potentially contestable market segments for the gas connections market (as we did for electricity at DPCR5)?

1.78. The majority of the GDNs considered that no changes to the existing connections margin arrangements were necessary, although one supported the introduction of a separate regulatory margin for the provision of contestable elements of non-statutory connections. Responses to our consultation highlighted that there does not appear to be consistency in when GDNs charge a margin for connection services. We did not receive responses on this issue from any other stakeholders.

Question 2: Are there market segments where competition works sufficiently well, where we should consider excluding these market segments from the guaranteed standards regime?

1.79. There was recognition from the GDNs that competition was working sufficiently well in a number of market segments, given this two GDNs considered further market segments could be excluded from the connections guaranteed standards. We did not receive responses on this issue from any other stakeholders.

Question 3: What, if any, new standards do you consider are required to ensure that gas connections customers receive a good standard of service?

1.80. The GDNs did not consider that any new standards were required to ensure gas demand connections customers receive a good standard of service. We did not receive responses on this issue from any other stakeholders.

Question 4: Should we extend existing standards to distributed gas customers? We would also welcome views on whether any new service standards should be introduced for distributed gas, and whether we should revisit this issue during the price review (once the market has developed)?

1.81. The GDN's considered that Ofgem should not introduce new standards of service for distributed gas customers at this time, although two supported a review of this part way through the price control period. One GDN suggested that voluntary service levels could be introduced. A customer group considered that standards should only be introduced with good reason, they highlighted the need to avoid giving preferential treatment to particular technologies.

Question 5: Should we change any of the existing standards' timescales, penalties, or caps on the penalties (for example, to bring them into line with the guaranteed standards in electricity)?

1.82. The GDNs considered that no changes were required to the connections standards timeframes, penalties or caps. A customer group supported the removal of caps on connection standards penalty payments.

Chapter 7 - Safety

Question 1: Do you have any views on the primary outputs and secondary deliverables for gas distribution safety including whether:

- (1) These are the appropriate areas to focus on?
- (2) There are any other areas that should be included?
- (3) The performance of the GDNs in undertaking their maintenance programmes should be used as a secondary deliverable for reliability?
- (4) You agree with our approach to changing the revenue driver for repx from length of main decommissioned to a volume driver of risk removed?

10.71. In general the GDNs supported our proposed set of primary outputs and secondary deliverables.

10.72. The respondents generally supported our proposal to replace the current repx revenue driver based on mains replaced with a revenue driver based on risk

removed, although the GDNs raised a number of concerns with how the mechanism would work in practice. For example, a number of the GDNs asked how the mechanism would accommodate service pipes which currently do not have an associated risk score. The GDNs also asked how the mechanism would accommodate the dynamic nature of risk, ie where the risk associated with an iron main changes over time within the review period.

10.73. The GDNs noted that they expected to continue to work with Ofgem in the development of this primary output to resolve these practical issues.

Question 2: Do you agree with the proposed approach of not imposing further incentives to safety?

1.83. Respondents also agreed that we should not introduce financial penalties and rewards in relation to output measures where the HSE has set an absolute performance standard and responsibility for compliance (and imposing penalties) rests with them.

Chapter 8 - Reliability

Question 1: Do you have any views on the primary output and secondary deliverables for gas distribution reliability including:

- (1) whether these are the appropriate areas to focus on?
- (2) whether any other areas that should be included?
- (3) whether it is appropriate to remove the cap on the guaranteed standard for supply restoration and change the level of payments?
- (4) the appropriate form of secondary deliverables on the time taken to address network faults?
- (5) whether there should be a secondary deliverable associated with offtake meter errors?

1.84. Only two GDNs commented on the loss of supply output and both respondents (NGG and WWU) supported the output measure. Subsequently NGG proposed an incentive arrangement for loss of supply

1.85. Responses to our proposals for capacity outputs were limited to the GDNs. In general they were supportive of the development of a capacity outputs measure..

10.74. One non GDN respondent expressed support for a specific output measure and incentive for offtake meter errors. A number of respondents, including some GDNs, raised issues over the controllability of some of the errors which were deemed outside of the GDNs' control. The point was raised that although the number of reports had recently increased, this was down to better reporting and that for a majority of these errors the value of the error was small.

Question 2: Do you agree with the proposed approach to reliability incentives?

1.86. One respondent requested an incentive should be included for offtake meter accuracy.

Question 3: We would welcome respondents' views on our proposal to require GDNs to develop their approach to valuing interruptible capacity to include a real option value, and views on how to achieve this.

1.87. Responses to our proposals for capacity outputs were limited to the GDNs. In general they were supportive of the development of a capacity outputs measure. There was support for our proposal to equalise incentives across different types of expenditure, the inclusion of a real option value in interruptible contracting, and the development of a process to support efficient investment across the NTS/GDN interface. Two GDNs stated that they supported maintaining separate incentives for spending on NTS exit capacity and interruptible contracts.

Chapter 9 – Broader approach to asset risk management

Question 1: Do you have any views on our proposed approach to the development of asset health and risk metrics including:

- (1) the approach to the assessment of asset health**
- (2) the number and definition of primary asset categories**
- (3) the assessment of criticality or consequences of failure**
- (4) the development of replacement priorities/risk metrics**

10.75. All GDN owners recognised the importance of effective asset management and supported our proposed approach to the development of asset health and risk metrics.

10.76. Whilst GDNs supported the approach to holistic asset management across assets, two GDNs indicated the costs associated with the significant data collection and validation that would be required. Another GDN noted that developing and populating asset health metrics may extend into the next price control period and therefore a phased implementation would be appropriate.

Question 2: Do you have any views on our proposed approach for the revenue driver associated with repex?

1.88. In principle the GDNs and HSE supported the proposal to introduce a primary output based on risk removed and an associated revenue driver for the 30:30 repex programme. However a number of the GDNs raised practical concerns with the development of this approach due to the modelling of network risk, stating that the replacement programme is based on a prioritisation process rather than an absolute mechanism.

Question 3: Do you have any views on our proposed uncertainty mechanisms associated with the repex review?

1.89. The GDNs all highlighted the uncertainty around the repex programme and link to the ongoing HSE review. The GDNs questioned the timing of the outcome of the review and the impact this has on their well-justified business plans.

Appendix 2 - Guidance notes for GDNs on secondary deliverables: asset tables

Introduction

1.1. This Section provides guidance to Gas Distribution Networks (GDNs) on the quantification of output measures related to RIIO-GD1 secondary deliverables to be reported in the asset health/condition and criticality matrices to generate risk indices.

Asset health/condition

1.2. Asset health has traditionally been quantified based on time to asset replacement. In RIIO-GD1, we proposed that this measure be quantified as a function of a broader set of indicators, not only limited to asset age, intended to capture the overall probability of asset failure in terms of risk removed from operations. Asset rates of deterioration are linked to expected average life, but asset monitoring can also take account of a wider set of factors, including fault rates, condition-based assessment and comparative evaluation across the asset base at different locations. Asset age profiles can be statistically assessed using probabilistic (simulation) models and constructing descriptive statistics around asset age profiles, for instance mean and median expected lifetimes and standard deviations around average age. Condition data should be updated and validated on an ongoing basis. Asset condition should also be assessed on the basis of additional criteria such as:

- fault rates;
- technical obsolescence
- physically observed condition based on visual inspections.

1.3. Condition assessment information should be rationalised into a model that allocates scores (based on engineering expertise as necessary) and maps them on to each of the five asset health categories provided in our Asset Health Index (HI). It is, however, acceptable for condition assessment to include elements of qualitative evaluation to demonstrate that the rankings obtained are consistent with consumers' best interests.

1.4. The asset HI rankings are as follows:

Asset health index	
HI1	New or as new
HI2	Good or serviceable condition
HI3	Deterioration, requires assessment or monitoring
HI4	Material deterioration, intervention requires consideration
HI5	End of serviceable life, intervention required

Asset criticality

1.5. Asset criticality is defined as the physical and monetary set of consequences of network asset failure on consumers and other stakeholders. As such, it can be quantified either in an ordinal way (as a scale of rankings in order of importance) or, when possible, as an ordered set of monetary values. It should be scored using a consistent methodology in order for us to compare different criticality levels across assets within companies. GDNs will be free to choose their own internal support tools to evaluate and quantify asset criticality. We will not impose any structure on internal criticality evaluation for asset management and stewardship purposes, but we will expect that each GDN map its internal criticality measures to the ordered scale we proposed in our Criticality Index (CI) matrix.

1.6. Asset criticality (which is a quantification of the consequences of asset failure on customers and stakeholders and, as such, can also be a monetary value) interacts with asset health/condition (which is a probability value) to arrive at a (potentially quantifiable) ranked Risk Index (RI).

1.7. The asset criticality index (CI) rankings are as follows:

Criticality index	
C1	Very High
C2	High
C3	Medium
C4	Low

1.8. Asset criticality takes three forms:

- safety criticality;
- environmental criticality

- network (or system) criticality.

1.9. In addition, if the GDNs are able to quantify the financial implications of the consequence of asset failure, then criticality may take a fourth form:

- financial criticality.

1.10. There are other aspects which might play a role in the assessment of asset criticality, namely legal considerations, licence obligations, statutory safety compliance, customer service obligations, and operational conditions. We expect the GDNs to coordinate on a high-level classification of criticality for gas distribution, although the internal information tools and systems used by GDNs to arrive at a common classification of criticality for regulatory reporting purposes will be expected to differ as a function of local, technical, and managerial characteristics.

1.11. We examine the different aspects of asset criticality in what follows.

Safety criticality

1.12. Safety criticality reflects the consequences of asset failure in terms of direct harm to personnel, or the public at large, for instance as a consequence of a gas explosion. In our asset tables circulated to the GDNs on 25 February 2011, we proposed four levels of asset criticality, from low to very high. A possible way of defining these four levels in the case of safety criticality is the following:

Failure can result in one or more fatalities	Very high CI
Failure can result in one or more permanent incapacitating injuries	High CI
Failure can result in reportable injuries	Medium CI
Failure can result in minor consequences (non reportable)	Low CI

1.13. The matrix above might also reflect further, more refined occurrences by adding an additional level of discrimination based on, for instance, the location of the asset(s) concerned and their proximity to personnel and members of the public.

Environmental criticality

1.14. Environmental criticality is based on the environmental impact caused by asset failure. Depending on the priorities observed by GDNs, environmental criticality can be classified either according to the four levels we proposed in our asset tables, or according to three levels, thereby excluding the 'Very High' category, on the assumption that the latter can only be applied to safety criticality in view of legal compliance obligations towards the Health and Safety Executive. However, we believe that environmental criticality in itself deserves a 'very high' classification in circumstances such as those outlined in the example matrix below.

Failure leads to a potential non-quantifiable serious damage to the environment (release of toxic gases, non-reversible water course pollution, permanent contamination of a wide geographical area with high population density and/or crucial renewable resources such as water reservoirs/lakes, rivers, forests)	Very high CI
Failure leads to a reversible but still reportable environmental incident which may result in prosecution, either at a company or individual level, as well as loss of company reputation	High CI
Failure leads to a significant environmental incident, still reportable to the Environment Agency, but not resulting in prosecution	Medium CI
Failure leads to a minor or very minor environmental incident, not centrally reportable to the Environment Agency, and usually manageable locally	Low CI

1.15. Environmental criticality must be assessed on an individual asset basis, as the environmental impact of asset failure will generally depend on asset type and location. For systems comprising of several asset types, each asset type or class must be scored separately, following the classes reported in our asset tables. In some cases, environmental consequences might not apply to a specific asset class. Although internal evaluation systems can and will differ across GDNs, we would expect the industry to come together and agree upon high level criteria to use in the evaluation of environmental criticality. In any case, we expect that all GDNs will be able to populate our asset criticality indices by mapping their own internal assessment systems to our four CI categories.

1.16. Other factors that the GDNs might like to consider include the risk of loss of methane (in tonnes) at a COMAH site or equivalent (which would be typically classified as very high criticality), and the risk of pollution of watercourses (which could be classified as high criticality). Offsite or constant noise pollution could be classified as medium criticality, and finally onsite (self-contained) or intermittent

noise pollution can be considered as low criticality. These are simply suggestions, and we welcome internal discussions with and amongst GDNs to arrive at a preferred shared classification.

System (network) criticality

1.17. System/network criticality covers the impact of the distribution systems not delivering services to the customers of GDN licensees and any impact on the general public, or the smooth operation of manufacturing, services, and the overall country economy. System criticality can be scored using our proposed CI index levels, as per other criticality categories. This aspect of criticality also covers system security of supply. As guidance, its impact may include the following cases:

- impact on vital infrastructure: directly connected customers, economic activities;
- impact on customers: deliverability of gas to areas in order of density (connection points per unit of area), MWh of gas at risk; and
- impact on system security of supply: delivery to final users considering yearly and seasonal peak demand margins²⁴, network flexibility requirements, prompt shipper, LNG, and storage access to networks (if 'distributed gas'), prompt biogas access to distribution networks, and system stability/balancing.

1.18. For example, reliability-related consequences of asset failure can be linked to our four CI levels in the following way:

Risk of loss of gas supply to more than 250 customers ²⁵	Very high CI
Risk of loss of gas supply to fewer than 250 customers	High CI
Risk of loss of local system capacity margin (redundancy)	Medium CI
Risk of loss of individual system units, with redundancy still available within the system	Low CI

1.19. We expect the GDNs to jointly investigate, using financial consequence evaluation methods, criticality levels and to provide a comparison of the criticality elements. The impact on the businesses and their stakeholders as a result of asset management decisions should be assessed on the basis of whole-life cost considerations. It would be desirable, but not immediately necessary, to have a joint methodology (across all GDNs) for consistent scoring of all aspects of asset criticality, although we will accept the mapping of internal criticality scoring systems to our top-down asset management reporting tables. Weighting and combining

²⁴ The greater the expected unsupplied demand, the greater the system criticality level.

²⁵ It has been noted by a number of GDNs at our Working Group meetings that the 10,000-20,000 industrial/commercial/residential customer thresholds typically observed for electricity DNOs approximately correspond to a 250 customer interruption threshold for gas GDNs, considering the different level of statistically observed frequency of supply interruptions in gas as opposed to electricity distribution.

criticality levels across different criticality categories runs the risk of 'cancelling out' (or averaging out) individually high criticality scores, potentially resulting in important individual criticality factors being under weighted or even ignored. For this reason, following analogous discussions we had with electricity TOs in 2010, we propose that scores for different categories of asset criticality be combined on a 'maximum value' basis, ie by taking the maximum score for each asset type of the relevant criticality category and use that score as the relevant/prevaling one across all criticality categories. All criticality scores should be reported based on the investment scenarios in our asset tables (with and without intervention), and both at the beginning, mid-period review (forecast) and the end (forecast) of the RIIO-GD1 price control period. In the longer term, we would expect to see forecasts across the population of assets covering different scenarios for deterioration of assets. We have received feedback from GDNs stating that additional scenarios, based on probabilistic modelling of asset condition, for instance on a 25 per cent to 75 per cent probability basis, are not feasible at the moment given the existing GDN asset data repositories and decision support tool modelling capabilities. As a result, we will accept 50 per cent (expected value) scenarios for the first time the asset evaluation exercise is undertaken in RIIO-GD1.

1.20. We encourage regular meetings between GDNs to further discuss the development of network output measures and to ensure the consistency and calibration of such measures across GDNs. The GDNs should share relevant internal documentation regarding processes for determining the interaction between asset health and criticality indices, and the determination of risk index (RI) levels.

1.21. We understand that the external publication of asset information and tables can be sensitive in terms of physical system security and we welcome discussions with the GDNs on the appropriate form of any external publication, subject to constraints, whether we jointly determine that the unabridged external publication of asset methodology and information with respect to condition, criticality, and risk might cause public safety concerns.

Financial criticality

1.22. We have received feedback from some GDNs on the possibility of quantifying the financial aspects of criticality in monetary terms. For safety criticality, we received proposals linked to loss of life calculations. For environmental criticality, we have received proposals linked to the monetary quantification of tCO₂ released into the atmosphere, based on government and EA benchmarks.

1.23. For system/network criticality, we have received proposals based on value of lost supply and loss of supply probability (note that the latter is considerably lower in gas than in electricity distribution). We would welcome a wider discussion amongst GDNs on the possibility of monetary quantification of asset criticality by criticality category. We expect that, in any case, decision tool procedures will capture and consider all relevant information to ensure that asset criticality is assessed consistently across GDNs. The mapping of all criticality categories must be included in asset replacement models based on risk indices resulting from the combination of health and criticality levels. The risk index levels are to be interpreted as follows:

Risk index	
RI1	Very high risk
RI2	High risk
RI3	Medium risk
RI4	Low risk
RI5	Very low risk

1.24. Finally, the interaction matrix between health and criticality, giving rise to risk indices, is as follows:

	Risk matrix (to be provided by GDNs)				
	HI1	HI2	HI3	HI4	HI5
C1					
C2					
C3					
C4					

1.25. The GDNs must provide their mapping from asset health and criticality to risk indices as part of their well justified business plans. The gas distribution assets we propose to include in the asset tables, for which indices should be computed individually, are as follows:

1	LTS Pipelines
2	Block valves
3	Special crossings
4	Telemetry and control (Local Transportation Systems)
5	Pig traps
6	N2 sleeves
7	Distribution mains
8	Services
9	Valves
10	Special crossings
11	Mains above 2 bar
12	Services above 2 bar
13	Risers
14	Gas holders
15	High pressure bullets

16	Telemetry and control (Distribution)
17	NTS off-takes
18	PRIs above 7 bar
19	PRIS below 7 bars (District Governors)
20	I&C governors
21	Service governors
22	Telemetry and control (Pressure Reduction)
23	Tank farms
24	LPG mains
25	LPG services
26	LNG Installations