



Promoting choice and value
for all gas and electricity customers

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

Final decision

Reference:

Publication date: 17 December 2012

Contact: James Grayburn, Head of RIO-GD1

Team: RIO-GD1

Tel: 020 7901 7483

Email: James.grayburn@ofgem.gov.uk

Overview:

This Supporting Document to the main Overview document sets out our Final Proposals on the outputs that the network companies will need to deliver over the RIO-GD1 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.

Associated documents

Main Document

[RIIO-GD1: Final Proposals – Overview](#)

Supporting Documents

[RIIO-GD1: Final Proposals Supporting Document – Finance and uncertainty](#)

[RIIO-GD1: Final Proposals Supporting Document – Cost efficiency](#)

Associated Documents

[RIIO-GD1: Final Proposals Financial Model](#)

[RIIO-GD1: Final Proposals – Real price effects and ongoing efficiency](#)

[appendix](#)

[Consultants report: PKF Audit letter on the financial models](#)

[Consultants report: RIIO Reviews Financeability Study \(Imrecon working with ECA\)](#)

Other Relevant Documents

[RIIO-GD1: Initial Proposals](#)

[Decision on strategy for the next gas distribution price control – RIIO-GD1](#)

[Handbook for implementing the RIIO model - Ofgem, October 2010](#)

[Glossary for all the RIIO-T1 and RIIO-GD1 documents](#)

Contents

| | |
|---|-----------|
| 1. Introduction | 5 |
| Structure of the suite of documents | 5 |
| Summary of our decision | 5 |
| Ensuring output delivery | 9 |
| Innovation | 9 |
| Structure of document | 10 |
| 2. Environmental outputs | 12 |
| Introduction | 12 |
| Broad environmental measure | 12 |
| Information provision and connection charging for distributed gas | 14 |
| Narrow Environmental measure | 15 |
| Shrinkage | 15 |
| Summary of Initial Proposals | 15 |
| Summary of respondents' views | 16 |
| Business Carbon Footprint (BCF) excluding shrinkage | 18 |
| Other emissions and natural resource use | 18 |
| 3. Customer service | 19 |
| Summary of Initial Proposals | 19 |
| Complaints metric | 20 |
| Stakeholder engagement | 20 |
| Reward/penalty | 21 |
| Summary of respondents' views | 21 |
| Customer satisfaction survey | 21 |
| Complaints metric | 22 |
| Stakeholder engagement | 22 |
| Reward/penalty for broad measure | 22 |
| Our decision | 22 |
| Customer satisfaction survey | 22 |
| Complaints metric | 24 |
| Stakeholder engagement | 25 |
| Penalty/reward associated with elements of broad measure | 26 |
| 4. Social outputs | 27 |
| Fuel poor network extensions scheme | 27 |
| Carbon monoxide awareness | 29 |
| Summary of Initial Proposals | 29 |
| 5. Connections | 31 |
| Summary of Initial Proposals and respondents' views | 31 |
| Our decision | 31 |
| 6. Safety | 32 |
| Introduction | 32 |
| Iron mains safety risk reduction | 32 |
| Summary of our Initial Proposals | 32 |
| Summary of respondents' views | 33 |

| | |
|--|-----------|
| Our decision | 34 |
| Iron mains – secondary deliverables | 40 |
| Other safety risk primary outputs and secondary deliverables | 41 |
| Summary of our Initial Proposals | 41 |
| Summary of respondents’ views | 41 |
| Our decision | 41 |
| 7. Reliability | 44 |
| Introduction | 44 |
| Loss of supply | 44 |
| A summary of our Initial Proposals | 44 |
| Respondents’ views | 44 |
| Our decision | 45 |
| Network capacity | 47 |
| Summary of our Initial Proposals | 47 |
| Summary of respondents’ views | 47 |
| Our decision | 47 |
| Network reliability | 48 |
| Summary of our Initial Proposals | 48 |
| Summary of respondents’ views | 48 |
| Our decision | 49 |
| Measuring performance in relation to asset health, risk and capacity metrics | 51 |
| Summary of Initial Proposals | 51 |
| Our decision | 51 |
| 8. Encouraging Innovation | 54 |
| Summary of Initial Proposals | 54 |
| Summary of respondents’ views | 55 |
| Our decision | 56 |
| Appendices | 59 |
| Appendix 1 - Summary of outputs, secondary deliverables, and monitoring/enforcement | 60 |
| Appendix 2 – Network Innovation Allowance | 64 |
| Appendix 3 – End of period review of network output measures, and capacity output utilisation | 67 |
| Summary of Initial Proposals | 67 |
| Summary of respondents’ views | 67 |
| Our decision | 67 |
| The capacity outputs incentive mechanism for GDNs | 72 |
| Appendix 4 - Examples of application of NOMs end of period review | 76 |
| Appendix 5 – Safety Outputs | 80 |
| Appendix 6 – Capacity Outputs | 83 |
| Appendix 7 – Shrinkage and Leakage Outputs | 85 |
| Appendix 8 – NTS Exit Capacity Costs | 86 |

1. Introduction

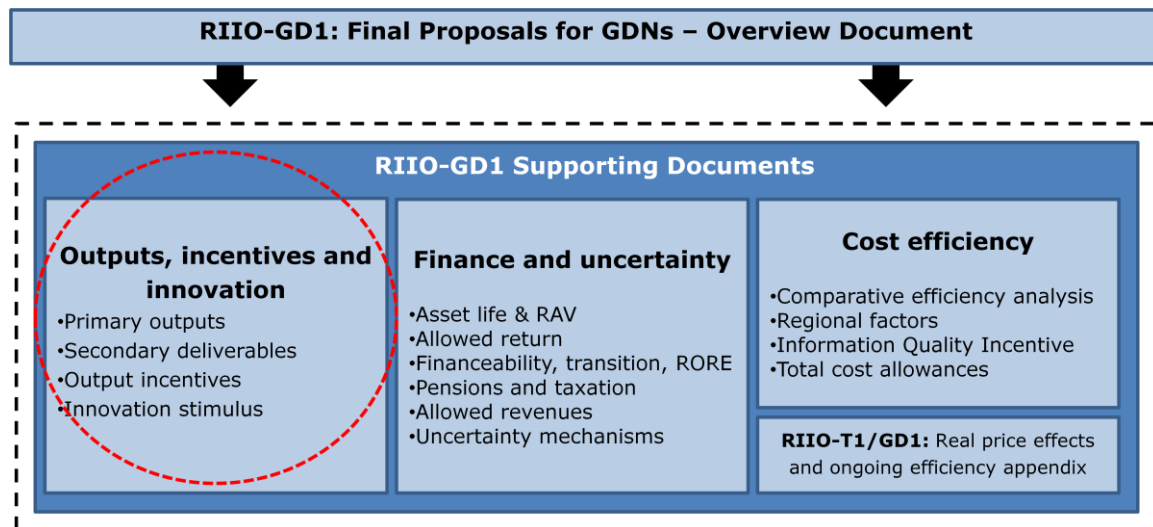
Chapter Summary

This chapter summarises our decision on the set of outputs that we will require GDNs to deliver over RIIO-GD1 based on our review of responses to our Initial Proposals (IP). We also discuss how we will monitor, incentivise and enforce output delivery.

Structure of the suite of documents

- 1.1. This document sets out in detail the outputs and associated incentive mechanisms that will apply over the RIIO-GD1 price control (April 2013-March 2021). It is aimed at those seeking a detailed understanding of our decision for RIIO-GD1. Stakeholders wanting a more accessible overview should refer to the RIIO-GD1 Overview Document.
- 1.2. This document is one of three Supporting Documents to the main Final Proposals Overview Document. Figure 1.1 below provides a map of the RIIO-GD1 documents published as part of our Final Proposals.

Figure 1.1 RIIO-GD1 document map



Summary of our decision

- 1.3. The adoption of an outputs based framework is a key element of the new RIIO framework. By defining the outputs companies need to deliver (eg risk-removed), instead of prescribing a set of inputs (eg length of mains abandoned), the framework provides incentives for companies to innovate and deliver the services that customers require at least cost. An outputs based

framework also provides greater transparency for customers (as well as companies) in relation to the services companies need to deliver.

- 1.4. For RIIO-GD1, we have identified a comprehensive set of outputs that we require companies to deliver, and associated incentive mechanisms which reward (or penalise) companies for their output performance.
- 1.5. The following table provides a high-level summary of our key decisions on the set of outputs and associated incentive mechanisms, as well as our proposals in IP.

Table 1.1: Summary of decisions on key outputs and incentive mechanisms

| Policy area | Initial Proposals | Final Proposals |
|---|--|---|
| Environment (broad measure) ¹ | <ul style="list-style-type: none"> - GDNs to report on biomethane capacity connected to networks - Discretionary reward scheme (DRS) for companies that deliver environmental outputs not funded at price review - Connection guide and provision of information for biomethane connections - We will consider connection boundary and charging arrangements for biomethane as part of industry code changes | <p>We have decided to introduce the outputs set out in IP, and as summarised in this table.</p> |
| Environment (narrow measure) ² | <ul style="list-style-type: none"> - Gas transport losses output levels - Strengthened shrinkage allowance and Environmental Emissions Incentive (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 | <ul style="list-style-type: none"> - We have decided to introduce the outputs identified at IP. - We set out our decision on the required reduction in gas transport losses, and precise arrangements for the strengthened EEI and shrinkage allowance mechanisms |
| Customer service | <ul style="list-style-type: none"> - Broad measure of customer service, comprising customer satisfaction survey, complaints metric, and discretionary reward for stakeholder engagement | <p>We set out our decision in relation to the specific details of the broad measure, including:</p> <ul style="list-style-type: none"> - weightings applied to constituent elements of the survey and complaints metric - performance levels at which GDNs incur penalties/earn rewards - weighting (as percentage of total revenues) applied to the different elements of the broad measure |

| Policy area | Initial Proposals | Final Proposals |
|----------------------|--|--|
| Social obligations | <ul style="list-style-type: none"> - Define carbon monoxide (CO) output and secondary deliverables, eg support activities that raise awareness of CO poisoning - Number of connections under the fuel-poor network extensions scheme - DRS for companies delivering outputs in relation to social objectives not funded at review | <ul style="list-style-type: none"> - We set out our decision to develop and publish a survey measuring customer awareness of CO risks. - Fuel poor network extension outputs (ie connection levels) have been approved - The DRS will provide rewards for companies delivering outputs in relation to social objectives not funded at review. The DRS will also reward companies for sharing the results of their activities in relation to raising CO awareness. - GDNs’ activities in relation to social issues (including CO and fuel poverty) will be eligible for a reward under the stakeholder engagement element of the broad measure where they work effectively with other stakeholders. |
| Customer connections | <ul style="list-style-type: none"> - Maintain current guaranteed standards - GDNs to develop voluntary connection standards of service for distributed gas entry customers during RIIO-GD1 | <p>We have decided to introduce the outputs set out in IP.</p> |
| Safety | <p>Confirmation of primary outputs and secondary deliverables, including iron mains risk removed</p> | <ul style="list-style-type: none"> - We have decided to introduce the output measures identified at IP. - We set out our decision on output levels, eg for risk removed, we propose to require GDNs to realise 15-20 per cent improvements in iron mains safety risk (as measured by MPRS). - We have also set out secondary deliverables associated with the primary risk removed output |
| Reliability | <p>Confirmation of primary outputs and secondary deliverables, including: (i) duration of interruption; (ii) achieving 1 in 20 capacity obligation; (iii) maintaining operational performance</p> | <p>We have decided to introduce the output measures at IP. We set out our decision on proposed levels, ie number & duration of interruptions etc</p> |

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 biomethane connection which contributes to the UK's carbon reduction targets. (2) We define "narrow environmental measures" as improvements to the company's own environmental impact, eg reduction in the company's own carbon emissions.

Ensuring output delivery

- 1.6. In this document we set out a comprehensive set of primary outputs that we require GDNs to deliver in return for the revenue allowances. We also set out a number of secondary deliverables that we require GDNs to report to enable us to assess their performance against the primary output.
- 1.7. In October 2012, we published for consultation our intended approach to developing the reporting requirements to enable us to monitor GDNs' output performance over the price control period, and ultimately hold GDNs to account.¹ As set out in our October 2012 consultation, we will finalise the reporting arrangements early in 2013 for introduction prior to the commencement of the price control.
- 1.8. The way in which we propose to hold GDNs to account for the outputs depends on the primary output. For example, a number of primary outputs relate to health and safety regulations and are enforced by the Health and Safety Executive, eg in relation to safety outputs. We will ensure compliance with other primary outputs through licence conditions, eg in relation to the emergency response primary output. For other output measures, GDNs are rewarded or penalised in relation to their output performance through a within period incentive mechanism (eg in relation customer services outputs or gas transport losses) or at an end of period review. In this document we set out the relevant incentive mechanisms and how we will undertake the end of period reviews of output performance.
- 1.9. We will monitor GDNs' performance against the asset measures through the annual reporting process, and we will take action (including our powers of enforcement under the licence) where there is unjustified under-delivery against the prescribed targets.
- 1.10. In Appendix 2, we set out the full set of outputs and secondary deliverables and means of monitoring and incentivising GDNs' performance, and holding them to account.

Innovation

- 1.11. The RIIO model has a number of elements to encourage innovation, including the longer price control and outputs framework. The framework also provides funding for network companies to undertake innovation where the commercial benefits are not clear, in the form of the network innovation competition (NIC) and the network innovation allowance (NIA).

¹ See: Ofgem (2012) RIIO-T1 and GD1: Draft Regulatory Instructions and Guidance. Link: <http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/RIIOT1andGD1draftRIGS.pdf>

1.12. Table 1.2 summarises our IP proposals in relation to NIC and NIA. The key change relative to IP is that we intend to run the gas NIC in 2013 following the recently announced proposed changes to the Gas Act. This should enable us to run the NIC on the basis of our preferred funding model (where the winning bidders’ costs are socialised through GT charges). If there is a material delay to the legislative changes we will halt the competition in 2013, and the unawarded funds would be rolled-over into subsequent years such that the overall level of funding in RIIO-GD1 is unchanged. We have also decided to increase the NIA funding for NGN and NGGD to 0.7 per cent of base revenues.

Table 1.2: Summary of innovation proposals

| Policy area | IP | Further issues for consultation |
|--------------------|--|---|
| NIC | Provide time limited innovation fund of up to £20m pa for gas distribution and transmission Consulted on options to delay the NIC given the statutory constraint on our preferred funding model based on GT-GT transfers | Expect the requisite amendment to statute in time to run the NIC in 2013 based on our preferred funding model. |
| NIA | Provide funding of 0.5-1 per cent of base revenues depending on quality and content of companies’ innovation strategies. Consulted on funding levels of 0.5 per cent funding for Scotia Gas Networks (SGN) and Wales and West Utilities (WWU), and 0.6 per cent for National Grid Gas Distribution (NGGD) and Northern Gas Networks (NGN) | Decision to increase the NIA for the highest quality innovation strategies, submitted by NGGD and NGN, from 0.6 to 0.7 per cent |

Structure of document

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

- Chapter 2: Environmental outputs
- Chapter 3: Customer service
- Chapter 4: Social outputs
- Chapter 5: Connections
- Chapter 6: Safety
- Chapter 7: Reliability

- 1.14. In addition, Chapter 8 sets out to the arrangements that will apply to encourage innovation.

2. Environmental outputs

Chapter Summary

This chapter sets out our decision in relation to environmental outputs and incentive mechanisms.

Introduction

- 2.1. The RIIO framework identifies two environmental objectives: to ensure that companies contribute to the wider environmental objectives, eg by facilitating low-carbon flows on the network and promoting energy efficiency ('broad environmental measure'), as well as minimising the environmental impact of their own activities ('narrow environmental measures').
- 2.2. In this chapter, in relation to the broad environmental measure, we set out our decision to:
 - publish companies' performance in relation to connecting low carbon generators, to provide reputational incentives to improve performance (relating to broad environmental measure)
 - continue with a £12 million discretionary reward scheme (DRS) that rewards companies that deliver outputs that contribute to environmental and social objectives beyond those funded at the price review
 - encourage voluntary connection standards for biomethane producers, and the timely provision of information in relation to connection.
- 2.3. In relation to the narrow environmental measure, we set out our decision to:
 - enhance the shrinkage allowance and environmental emissions incentive (EEI); mechanisms which provide enhanced incentives to reduce network losses. We also set out proposed outputs levels in relation to gas transport losses.
 - publish companies' performance in relation to their business carbon footprint and other natural resource emissions, to provide a benchmark, and a reputational incentive to improve performance.

Broad environmental measure

- 2.4. In terms of the broader environmental objective, we intend to create an enabling regulatory environment to ensure that companies play their role in

delivering a low carbon energy sector. For the GDNs, their most prominent role involves facilitating the connection of renewable gas (ie biomethane)² plant.

Summary of Initial Proposals

- 2.5. In IP we restated our intention to publish companies' comparative performance in relation to biomethane connections. We did not propose to introduce a financial reward for the capacity of biomethane connections and carbon flows on GDNs' networks, as proposed by SGN, given the level of biomethane connections is (largely) outside GDNs' control, eg a key determinant will be the relative level of fiscal support for biomethane.
- 2.6. At IP³ we also set out our intention to revise the DRS established under the current price control (GDPCR1). We proposed to retain the DRS but with a specific focus on environmental and social outputs. The revised focus acknowledges that the stakeholder element of the broad measure of customer service will now provide financial incentives for GDNs to improve performance in the other areas covered by the current (more widely scoped) DRS.
- 2.7. We did not propose to expand the scheme to cover specific social objectives (in relation to the utilisation of priority services registers, companies' social obligations and business carbon footprint), or to increase the financial reward, as proposed by SGN.

Summary of respondents' views

- 2.8. Respondents supported the publication of GDNs' comparative levels of biomethane connections in order to provide reputational incentives. However, respondents also reiterated that the level of biomethane connections will be principally determined by factors outside GDNs' control. SGN continued to support a direct financial reward for biomethane connections.

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 biomethane by removing the oxygen. Distributed gas refers to non-renewable sources of gas (such as shale gas), as well as renewable sources (ie biomethane).

³ Decision on strategy for the next distribution price control – RIIO-GD1 outputs and incentives.

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=312&refer=Networks/GasDistr/RIIO-GD1/ConRes>

Our decision

- 2.9. We confirm our proposal set out at IP to publish companies' performance in relation to biomethane connections for the following measures: (i) the total capacity (MW) of biomethane connected; and (ii) the total capacity (MW) of biomethane enquiries and applications currently in progress but not yet connected.
- 2.10. We will introduce a modified DRS to reward network companies that deliver additional outputs to contribute to environmental (or social) objectives beyond those funded at the price review. The total reward will be £12 million awarded in three tranches of £4million (with assessment taking place in years three, six and nine following the start of RIIO-GD1).⁴
- 2.11. We will consult on our assessment approach and governance arrangements for the operation of the DRS during the first quarter of 2013. We will issue detailed guidance in the year prior to the allocation of the reward.

Information provision and connection charging for distributed gas

Summary of Initial Proposals

- 2.12. In IP we stated that we would develop requirements to enhance information provision for distributed gas, and we would introduce a licence condition setting out the requirements. We developed a draft licence condition setting out the proposed obligations on GDNs in this area, and consulted on the licence condition as part of a parallel consultation process.
- 2.13. In relation to the connection charging boundary, we stated in IP (drawing on our Strategy Document) that GDNs should review their charging methodology for entry customers, and propose modifications if there was an objective rationale for doing so. We have since approved a Uniform Network Code (UNC) modification (modification 391). The modification introduced changes to the Local Distribution Zone (LDZ) System Charging Methodology to more accurately reflect the costs associated with the entry of distributed gas directly into the distribution networks. It makes no changes to the current connection charging arrangements.⁵

⁴ The third and final review will take place in the first year of RIIO-GD2, and will assess GDNs' performance in relation to the last three years of RIIO-GD1.

⁵ http://www.gasgovernance.co.uk/sites/default/files/Draft%20Modification%20Report%200391%20v1.0_0.pdf

- 2.14. We proposed an uncertainty mechanism to accommodate any change to the connection charging boundary where the GDN incurs costs as a result of the change.⁶

Summary of respondents' views and our decision

- 2.15. Respondents supported the introduction of a licence condition setting out the GDNs' obligations on information provision for distributed gas connections.
- 2.16. We have decided to implement the proposals as set out in IP and summarised above, ie to introduce licence conditions to: (i) require GDNs to provide information to connectees; and (ii) accommodate any changes to the connection charging boundary. We will publish the licence conditions as part of our licence statutory consultation that we intend to publish on 21 December 2012.

Narrow Environmental measure

Shrinkage

Summary of Initial Proposals

- 2.17. Shrinkage refers to gas which is lost from the transportation network. It is the dominant element of companies' business carbon footprint (BCF) and accounts for more than 0.75 per cent of GB green house gas emissions. For the current price control, we introduced an Environmental Emissions Incentive (EEI) and shrinkage allowance mechanism, which both provide GDNs with an incentive to minimise gas transport losses. The reward or penalty is equal to the non-traded carbon price (in relation to EEI), and a reference gas commodity price (shrinkage allowance mechanism).
- 2.18. In our IP document, we set out proposed reductions in shrinkage of around 20 per cent over the price control period. We also outlined proposals to enhance the current incentives through the introduction of a rolling incentive mechanism. We proposed this change to ensure that companies retain the benefits of outperformance (or costs of underperformance) for eight years irrespective of when in the price control period the outperformance or underperformance is realised.
- 2.19. In IP we outlined two options for the design of the rolling incentive, a) and b).⁷ Both options are identical in terms of outcomes and the differences relate

⁶http://www.gasgovernance.co.uk/sites/default/files/Draft%20Modification%20Report%200391%20v1.0_0.pdf

⁷ See Appendix 3 of IP Outputs Supporting Document for a description of both options.

to when the reward (or penalty) payment occurs. Option a) provides companies with the in-year benefits or penalties for performance with a true-up in RIIO-GD2 to provide eight years worth of benefits or reward for incremental performance which has proven to be enduring. Option b) provides eight years' worth of reward or penalties for performance in year. A true-up in RIIO-GD2 then adjusts these revenues to take account of any performance which proved not to be enduring. We asked respondents to consider the impact of both options on volatility of network charges. We also asked respondents whether a rolling incentive mechanism should be applied to the shrinkage allowance mechanism as well as the EEI.

Summary of respondents' views

- 2.20. Respondents were generally supportive of our proposal to introduce a rolling incentive mechanism to the shrinkage allowance. They considered the rolling incentives would provide consistent treatment on the commodity cost and environmental impact of leaked gas. However, WWU was concerned about the increased risk for GDNs; and one shipper expressed concern about increased complexity.
- 2.21. WWU also opposed both options presented for the design of the rolling incentive, and instead supported the retention of the current mechanism. NGGD and NGN stated that they supported option b) for the design of the rolling incentive as they were concerned that option a) may involve a significant true-up during the RIIO-GD2 period. NGGD commented that the true-up in option a) could result in considerable charging instability. However, one shipper supported option a) on the basis that it would provide more stable charges.

Our decision

Shrinkage volumes

- 2.22. Appendix 7 sets out in detail our proposed shrinkage and leakage targets (or baselines against which GDNs will receive reward or penalty). Relative to IP, we have increased the required improvements to gas transport losses for NGGD, SGN and WWU to reflect our increase in funding for mains replacement. Our revisions to companies' baselines means that we expect GDNs to deliver an improvement of around 15 to 20 per cent in gas transport losses over the RIIO GD1 period.

Table 2.1 – Proposed shrinkage volumes (GWh)

| GDN | Shrinkage volume (GWh) | | Reduction (%) |
|----------------|------------------------|---------|---------------|
| | 2012/13 | 2020/21 | |
| NGGD – EoE | 569 | 491 | 15.3 |
| NGGD – Lon | 317 | 267 | 17.5 |
| NGGD – NW | 407 | 335 | 19.8 |
| NGGD – WM | 335 | 288 | 15.5 |
| NGN | 459 | 386 | 17.8 |
| SGN – Scotland | 247 | 202 | 20.5 |
| SGN – Southern | 637 | 527 | 19.3 |
| WWU | 440 | 385 | 14.0 |

Shrinkage and leakage incentive mechanisms

- 2.23. In line with most respondents’ views, we have decided to introduce a rolling incentive mechanism to the shrinkage allowance mechanism as well as the EEI. We acknowledge that GDNs are not in control of the commodity cost (as noted by WWU in its response to IP) but our proposals do not involve exposing GDNs to commodity price risk. Instead, the proposed rolling incentive mechanism will enhance GDNs’ prospective rewards and penalties for their performance in minimising shrinkage volumes without exposing them to increased commodity price risk (which they recover through allowed revenues).
- 2.24. Companies will receive a forecast allowance for shrinkage based on allowed shrinkage volumes (see Appendix 7) and a forecast gas price. These forecast costs will then be adjusted to take account of actual gas costs.
- 2.25. In terms of the design of the rolling incentive mechanism, we have decided to implement option (b). This option results in a greater proportion of the reward or penalty being realised within the price control period, as opposed to being included in a true-up in RIIO-GD2 (as under option (a)). We consider that option (b) should result in reduced charging volatility relative to option (a). In addition, in line with our decision on charging volatility, we will introduce a two-year lag between the reward/penalty being known and the value being recovered through network charges in order to improve the predictability of charge changes.⁸
- 2.26. We recognise that revenues under the rolling incentive will be strongly influenced by companies’ performance in the last year of RIIO-GD1. This performance could be influenced by factors outside GDNs control such as third party damage to gas mains. To mitigate for this, we welcome modifications to the shrinkage model (used by GDNs to calculate and report shrinkage and

⁸ Please see our decision document of charging volatility:
http://www.ofgem.gov.uk/Networks/Policy/Documents1/CV_Decision.pdf

leakage) which addresses this issue whilst continuing to place the right incentives on companies to manage shrinkage and leakage.

Business Carbon Footprint (BCF) excluding shrinkage

- 2.27. In IP (and as set out in our March 2011 Strategy Document) we set out our intention to require GDNs to report annually on their carbon dioxide (CO₂) equivalent emissions, using a standard framework for reporting BCF which we will develop with the industry. We proposed not to introduce a financial reward/penalty to avoid duplicating existing government fiscal policy which incentivises reductions in companies' BCF.
- 2.28. We did not receive any material responses to IP, and thus we confirm our proposal to set out GDNs' comparative performance to provide reputational incentives to address BCF. We consulted on the details of the BCF reporting framework as part of our 30 October 2012 RIGs consultation. We intend to finalise the reporting requirements (working with the industry) by 1 April 2013.

Other emissions and natural resource use

- 2.29. In our IP document, we set out the number of sites we would expect GDNs to remediate to statutory requirements. We also stated that we would expect GDNs to report their volumes of aggregate extraction and spoil to landfill. We also stated that we would publish a comparative assessment of their performance levels, ie to provide reputational incentives to improve performance in relation to these outputs.
- 2.30. We also proposed to require GDNs to report annually on the number of major non-compliance issues identified in their annual environmental reporting (reported through the ISO 14001 independent audit process).
- 2.31. We confirm that we will require GDNs to report on the other measures we set out at IP, ie aggregate use and spoil to landfill. We set out the expected number of sites remediated to statutory levels (and our proposed allowance) as part of our assessment of gas holder decommissioning costs. As with other output measures, we are consulting on the detailed reporting requirements in relation to other emissions (ie non carbon) and resource use as part of our 30 October 2012 RIGs consultation, and we intend to finalise reporting requirements by 1 April 2013.

3. Customer service

Chapter Summary

In IP we set out our proposals for delivering good customer service, by introducing a new broad measure of customer service. This chapter sets out our decision on the incentive structure.

Summary of Initial Proposals

3.1. The broad measure of customer service is a new incentive that is designed to drive gas distribution networks to provide customers with a good level of service. The incentive contains the following three components:

- Customer satisfaction survey
- Complaints metric
- Stakeholder engagement incentive

3.2. We set out our proposals for each component of the broad measure of customer service in IP. In this chapter we summarise the key issues we consulted on followed by our decision.

Customer satisfaction survey

3.3. The customer satisfaction survey incentivises GDNs to improve their service to customers. It rewards GDNs that perform well and penalises those that perform badly.

3.4. We consulted on several elements of the incentive design in IP:

- the weighting for each customer survey category (unplanned interruptions, planned interruptions and connections)
- the level at which a GDN incurs their maximum reward and penalty (the maximum reward/penalty scores)
- the reward/penalty incentive rate.

3.5. In IP, we proposed that we should measure GDNs' performance in relation to the customer service provided to connection, unplanned interruptions and planned interruptions customers separately. We proposed to calculate a composite score based on an equal weighting for each type of customer interaction, ie one-third weighting for each type.

- 3.6. We proposed a target score (where the reward/penalty equals zero) equal to the upper quartile performance established during the trial survey in 2011-12. We analysed several different methods of calculating the maximum reward/penalty scores (see Appendix 4 of IP). We ultimately supported a simple, asymmetric approach that is broadly based upon 1.5-1.75 standard deviations from the mean score during the trial.⁹ We also proposed that the incentive rate should be a GDN's total revenue exposure divided by the difference between the maximum penalty/reward score and the target. (See Table 3.3, IP – Supporting Document - Outputs, incentives and innovation Supporting Document).

Complaints metric

- 3.7. The complaints metric drives GDNs to resolve complaints to the customer's satisfaction efficiently and effectively.
- 3.8. In IP we proposed that performance under the complaints metric should be assessed against four key indicators (with the weightings to calculate the composite score in parentheses)
- percentage of complaints unresolved after one working day (10 per cent)
 - percentage of complaints unresolved after 31 working days (30 per cent)
 - percentage of repeat complaints (50 per cent)
 - percentage of Energy Ombudsman (EO) findings against the GDN (10 per cent)
- 3.9. We proposed a target score based on the upper quartile score established during the trial in 2011-12. We proposed that if a GDN performs lower than 1.75 standard deviations from the 2011-12 average, then it should incur the maximum penalty (-0.5 per cent of revenues). There is no upside to this incentive.

Stakeholder engagement

- 3.10. The stakeholder engagement incentive drives GDNs to engage with a range of stakeholders to inform their business making decisions. We set out our high-level proposals for assessing stakeholder engagement in our March 2011 Strategy Document and we provided further details on how this will operate in our IP document.

⁹ We explain our rationale for using an asymmetric approach in detail in paragraph 3.14 of IP, and Table 3.3 outlined the proposed target score and the score at which the GDN would incur their maximum penalty and reward. <http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20Outputs%20and%20Incentives%20Initial%20proposals%20270712.pdf>

- 3.11. Under our proposed approach, each GDN would submit on an annual basis a stakeholder engagement report which would be assessed against minimum requirements.
- 3.12. Those that meet minimum requirements would be assessed and scored by an independent expert panel chaired by us. The panel will make recommendations on a score for each eligible GDN that will determine the allocation of a financial reward under the incentive mechanism.

Reward/penalty

- 3.13. In IP we proposed a reward or penalty for the constituent elements of the broad measure of customer service of up to +/-0.5 per cent of revenues (customer survey); up to -0.5 per cent of revenues (complaints metric); and up to +0.5 per cent of revenues (stakeholder engagement). This corresponds to an overall reward/penalty for the broad measure of customer service of between +/- one per cent of allowed revenue.

Summary of respondents' views

Customer satisfaction survey

- 3.14. All GDNs agreed with our proposal to introduce separate targets and equal rewards/penalties for each type of customer interaction.
- 3.15. In relation to setting the target, at which no reward or penalty is applied, all the GDNs supported fixing the target for the whole price control period in order to provide certainty. Two DNOs suggested introducing a mechanism that could recalibrate the target if industry performance changed significantly during the period.
- 3.16. All GDNs supported our proposed simple approach to determine the maximum reward/penalty scores. The GDNs supported the values proposed for the planned and unplanned interruption categories. The GDNs did not support the values proposed for the connections category, as they considered that they were not consistent with the approach used to determine the values for the other categories. One shipper did not agree with an asymmetric approach to determining the maximum penalty/reward.
- 3.17. One shipper considered that shippers should be included in the customer satisfaction survey.
- 3.18. NGGD considered that we should take into account the longer connection times for connection in London (related to the time to obtain relevant permits) in setting the customer satisfaction targets for its London GDN.

Complaints metric

- 3.19. In their response to IP, all GDNs believed that a 10 per cent weighting on 'the percentage of EO (Energy Ombudsman) decisions that go against the company' was too high. The GDNs were concerned that they could incur a disproportionately large financial penalty if one decision goes against the company. The GDNs also proposed to lessen the associated penalty with this element.

Stakeholder engagement

- 3.20. In general, the network companies supported our proposed approach to assessing stakeholder engagement. However one GDN expressed concerns that it would be difficult to earn the maximum reward.
- 3.21. One shipper expressed concern that the proposed approach was too subjective and that we should not be rewarding GDNs for 'business as usual' activities in relation to stakeholder engagement. It also considered that the incentive should be symmetrical, ie a reward and penalty rather than reward only.

Reward/penalty for broad measure

- 3.22. Three GDNs supported retaining the reward/penalty that we set out in IP of +/- one per cent. NGN proposed reducing the maximum reward for the stakeholder engagement incentive with an equal and offsetting increase in the maximum reward for the customer satisfaction survey.

Our decision

Customer satisfaction survey

- 3.23. Table 3.1 sets out our decision in relation to the design of the customer satisfaction survey. As proposed at IP, we have decided to introduce separate targets and rewards/penalties for each customer service category (unplanned interruptions, planned interruptions and connections), with each customer category weighted equally.
- 3.24. We do not propose to include shippers within the survey. This is because engagement with shippers is incentivised through the stakeholder engagement element of the broad measure.
- 3.25. To ensure greater consistency with the approach used to calculate the maximum reward/penalty scores for the planned and unplanned interruptions components of the customer satisfaction survey, we propose to reduce the maximum reward/penalty scores for the connections component of the

customer satisfaction survey by 0.1. The fixed maximum penalty and reward scores are outlined in Table 3.1.

- 3.26. We note NGGD’s concern that there may be factors outside of the GDNs’ control that could affect customers’ satisfaction with the service received. We consider that this is particularly relevant for connections activities in regions where work may be restricted, eg through the introduction of permitting schemes. In these instances, we do not support adjusting the scores or the target level of performance for affected GDNs. Instead, to mitigate the impact on networks’ performance we have decided to reduce the score at which a GDN incurs the maximum penalty to 7.3.
- 3.27. To provide certainty we have decided to fix the targets and maximum reward/penalty scores for the price control period. We are satisfied that these fixed values are at a sufficiently high level and we consider that it will remain a challenge for GDNs to meet these levels of satisfaction during RIIO-GD1.
- 3.28. We have decided to calculate the target and maximum reward/penalty score based on the upper quartile trial data and broadly 1.5-1.75 standard deviations from the mean score.
- 3.29. As set out at IP the incentive rate will be determined by dividing the total revenue exposure by the difference between the maximum reward/penalty score and the industry target.
- 3.30. Table 3.1 sets out the targets and maximum reward/penalty scores for each customer satisfaction survey category

Table 3.1: Financial weightings, targets and scores associated with maximum penalty and maximum reward for the customer satisfaction survey

| Element | Financial Weighting | Maximum Reward Score | Target | Maximum Penalty Score |
|-------------------------------|---------------------|----------------------|--------|-----------------------|
| Unplanned Interruption | 33.33% | 9 | 8.81 | 8.0 |
| Planned Interruption | 33.33% | 8.5 | 8.09 | 7.5 |
| Connection | 33.33% | 8.4 ¹⁰ | 8.04 | 7.3 ¹¹ |

- 3.31. We will provide clarification on customer service category definitions in our regulatory instructions and guidance (RIGs) for 1 April 2013 as part of our ongoing RIGS consultation.

¹⁰ We proposed a maximum reward score of 8.5 for connections in Initial Proposals.

¹¹ We proposed a maximum penalty score of 7.5 for connections in Initial Proposals.

Complaints metric

- 3.32. Following IP we recognise that measuring ‘the percentage of EO decisions that go against the GDN’ potentially places too great a weight on such decisions. Therefore to reduce the weighting, we propose to change the metric to ‘the number of EO decisions that go against the GDN as a percentage of the total complaints received’. Since the number of the cases referred to the EO is relatively low, the contribution of this indicator to a GDN’s composite metric score will be correspondingly reduced.
- 3.33. We consider that the change to the complaints metric avoids the need to apply exemptions to EO decisions, as the impact of their decisions on overall performance is diminished.
- 3.34. In Table 3.2 we set out our decision on the weighting of each indicator in calculating the complaints metric composite score:

Table 3.2: Complaints metric weightings

| Indicator | Weighting |
|---|------------------|
| Percentage of complaints unresolved after one working day | 10 per cent |
| Percentage of complaints unresolved after 31 working days | 30 per cent |
| Percentage of repeat complaints | 50 per cent |
| The number of EO decisions that go against the GDN as a percentage of total complaints received | 10 per cent |

- 3.35. The fixed target is calculated based on upper quartile performance during 2011-12 and the maximum penalty score is calculated based on 1.75 standard deviations from the mean level of performance in 2011-12. Based on the revised EO indicator, the fixed target and maximum penalty scores are outlined in the table below:

Table 3.3: Complaints metric target and maximum penalty scores

| | |
|------------------------------|---------------------|
| Target score | 11.57 ¹² |
| Maximum penalty score | 23.23 ¹³ |

¹² Based on our proposals, there are numerous ways in which a score of 11.57 could be achieved. For illustration a score of 11.57 could equate approximately to a company that has 51 per cent of complaints outstanding after one day, 20 per cent of complaints outstanding after 30 days, 1 per cent repeat complaints and 0 per cent of total complaints being found against the GDN by the EO.

¹³ Based on our proposals, there are numerous ways in which a score of 23.23 could be achieved. For illustration a score of 23.23 could equate approximately to a company that has

- 3.36. As proposed at IP, we have decided the incentive rate will be determined by dividing the total revenue exposure by the difference between the maximum penalty score and the industry target.

Stakeholder engagement

- 3.37. We have also decided to retain a reward only approach for stakeholder engagement. We consider that this is justified given the minimum requirements we have set out for GDNs to earn a reward. Our approach also ensures that the overall broad measure of customer satisfaction is symmetric, ie at +/- one per cent of revenues.
- 3.38. As proposed in IP, our aim for the stakeholder engagement incentive is to reward companies for high quality outcomes resulting from the stakeholder engagement process. Only those companies who meet the minimum requirements will qualify to attend an independent panel assessment. The panel will assess the submissions, through a question and answer session and with the aid of a scorecard. They will then make recommendations on a score for each eligible network company that will determine the allocation of a financial reward under this incentive.
- 3.39. In assessing GDNs' performance, we will focus on the outcomes achieved rather than the engagement process itself. In order to achieve these outcomes, the company is expected to have a stakeholder engagement process in place which meets the following minimum requirements:
- The network company has a comprehensive and up to date stakeholder engagement strategy, which sets out:
 - how it keeps stakeholders informed about relevant issues, business activities, decision-making and other developments
 - how it enables timely input and feedback from stakeholders via appropriate mechanisms to inform decision making.
 - A broad and inclusive range of stakeholders have been engaged.
 - The company has used a variety of appropriate mechanisms to inform and engage their stakeholders – these have been tailored to meet the needs of various stakeholder groups, and are fit for purpose in allowing a detailed analysis of a breadth of stakeholder perspectives
-

100 per cent of complaints outstanding after one day, 40 per cent of complaints outstanding after 30 days, 2 per cent repeat complaints and 2 per cent of total complaints being found against the GDN by the EO.

- The company can demonstrate it is acting on input/feedback from stakeholders.
- 3.40. As proposed in IP, we have decided to trial the arrangements for gas distribution. We will undertake a pilot stakeholder engagement panel assessment in Summer 2013. We will then assess performance in the first year of RIIO-GD1 in Summer 2014.
- 3.41. We will set out more detailed information on the process for operating the stakeholder engagement incentive (eg application timescales, panel appointment, assessment procedure and key areas of assessment) in the Stakeholder Engagement guidance document. We will publish this guidance as part of our licence statutory consultation on 21 December 2012 (and which we consulted on informally as part of our 30 October consultation). This guidance document will be updated and published when necessary.

Penalty/reward associated with elements of broad measure

- 3.42. With the exception of NGN, we note that respondents supported our proposed reward/penalty for the different elements of the broad measure. We have therefore decided to retain the rewards/penalties set out in IP, and set out in the table below.

Table 3.4: Maximum reward/penalty for each element of the broad measure of customer satisfaction

| Component of Broad Measure | Maximum reward/penalty (as a percentage of licensee allowed revenue) |
|-----------------------------------|---|
| Customer Satisfaction Survey | Up to +/- 0.5 per cent |
| Complaints Metric | Up to -0.5 per cent |
| Stakeholder Engagement | Up to +0.5 per cent |

4. Social outputs

Chapter Summary

In IP we consulted on the proposed level of fuel poor network connections. We also set out our proposed carbon monoxide (CO) output measure. This chapter sets out our decisions on these issues.

Fuel poor network extensions scheme

Summary of Initial Proposals

- 4.1. In our March 2011 Strategy Document we set out our proposals to continue with the fuel poor network extensions scheme. We also set out our intention to undertake a review to assess whether the scheme is consistent with DECC's Heat Strategy.¹⁴
- 4.2. At IP we proposed to fund the GDNs' proposals to connect around 75,000 households in total over RIIO-GD1.¹⁵ We requested views on the proposed output level, and in particular, evidence from GDNs and other parties in relation to the potential to connect greater numbers of fuel poor households (within the constraints of the current scheme).
- 4.3. We also noted the role for the Discretionary Reward Scheme (DRS) to provide a financial incentive to GDNs to facilitate the development of non-network solutions to the fuel poor, by rewarding GDNs for working with other parties in the sector (electricity distributors, suppliers, technology providers) for example to facilitate sustainable energy solutions to the fuel poor.
- 4.4. We also need to ensure that GDNs work with other stakeholders to identify the least cost solution for fuel poor households. As set out in Chapter 2, the DRS will provide a reward mechanism for GDNs to work with other parties to develop an integrated approach to address fuel poverty.
- 4.5. In addition, our recent consultation on our future strategy for vulnerable customers¹⁶ considered the need for a greater degree of cross-industry and

¹⁴http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/incentive.aspx

¹⁵ Table A4.6 in appendix 4 lists the annual forecasts for fuel poor network extensions

¹⁶<http://www.ofgem.gov.uk/Sustainability/SocAction/Documents1/Proposals%20for%20a%20new%20Consumer%20Vulnerability%20Strategy.pdf>

wider working to develop solutions to help address issues beyond gas network extensions.

Summary of respondents' views

- 4.6. Respondents generally supported the numbers of fuel poor network extensions. However, SGN confirmed a higher connection level of 9,000 for its Southern GDN over RIIO-GD1 instead of the 6,000 reflected in IP.
- 4.7. NGGD considered that the uncertainty over the timing and outcome of the review could undermine the scheme. WWU asked whether GDNs would be required to deliver outputs for individual years. It considered that annual targets would be unnecessarily prescriptive and could result in inefficient workloads.

Our decision

- 4.8. We will fund the GDNs' proposals to connect around 77,000 households in total over RIIO-GD1 (set out in Table 4.1 below).¹⁷ Our decision includes SGN's proposed increase in connections relative to IP. We will hold GDNs to account for realising the number of fuel poor network extensions over the period (as opposed to an annual basis), and we will adjust GDNs' allowances at the end of RIIO-GD1 for any failure to deliver the prescribed output (where our adjustment will be based on the avoided costs). We set out the allowed costs in relation to the output delivery in the Cost Efficiency Supporting Document.
- 4.9. As proposed at IP, the DRS will provide a financial incentive to GDNs to facilitate the development of non-network solutions to the fuel poor. For example by rewarding GDNs for working with other players in the sector (electricity distributors, suppliers, technology providers), to facilitate sustainable energy solutions to the fuel poor.
- 4.10. As set above, we also intend to undertake a review of the scheme during RIIO-GD1 in order to consider the consistency of the scheme with DECC's Heat Strategy. In response to NGGD's comments on the impact of uncertainty on the scheme, we will provide at least six months notice to GDNs and other stakeholders in the event of any changes in funding levels for the scheme.

¹⁷ Table A4.6 in Appendix 4 in IP lists the annual forecasts for fuel poor network extensions

Table 4.1 – Number of forecast fuel poor network extensions by GDN over RIIO-GD1

| Company | Licensee | Total |
|----------------|-----------------|---------------|
| NGGD | East of England | 10,080 |
| | London | 2,880 |
| | North West | 13,330 |
| | West Midland | 8,360 |
| NGN | | 12,000 |
| SGN | Scotland | 11,000 |
| | Southern | 9,000 |
| WWU | | 10,800 |
| Total | | 77,450 |

Carbon monoxide awareness

Summary of Initial Proposals

- 4.11. In IP, we stated we would set a common output measure to measure public awareness of the risks of carbon monoxide (CO) poisoning. We noted that we intended to work with the industry to develop a common methodology/survey to measure awareness. We also proposed to publish the GDNs’ performance in order to highlight activities that have been effective in raising awareness.
- 4.12. We did not propose to introduce a financial reward/penalty in relation to the proposed output measure (as proposed by SGN). We did not believe SGN’s proposal provided a robust output measure which is attributable to GDNs’ activities or established a basis for setting the marginal reward/penalty.
- 4.13. In terms of funding, we expected GDNs to deliver improved CO awareness through down-time associated with their emergency service personnel.

Summary of respondents’ views

- 4.14. Four respondents commented on our proposals. SGN was disappointed that we had not supported its proposal to link a financial incentive to improvements in consumer awareness of CO risks. Another network company considered a financial incentive would be inappropriate due to the impact of activities carried out by other agencies.
- 4.15. In its business plan NGGD had proposed an output of 2.1m CO service contacts. These would help inform consumers on risks associated with CO. This process would also include the distribution of 105,000 CO alarms to those deemed especially vulnerable. A follow up survey would assess the impact of the contacts. This commitment was predicated on the funding it had requested to resource its emergency service. The funding levels we had allowed in IP were not consistent with its projection and, without adjustment; it therefore

could not commit to its proposed level of CO awareness visits. NGGD reiterated its commitment to develop a survey to measure awareness.

Our decision

- 4.16. We note the range of activities each GDN is proposing to undertake to increase awareness of CO risks. During 2013-14 we will work with the industry to develop a survey that captures awareness amongst consumers of CO risks. Once the survey and reporting arrangements are in place we will publish results of this survey in order to identify those activities that have maximum impact upon consumers.
- 4.17. We will not introduce a financial reward/penalty in relation to the proposed output measure. This is due to the problems with attribution (given the role of suppliers and others in this area), as well as the absence of a clear basis for setting the marginal reward/penalty.
- 4.18. We note NGGD's comments regarding its ability to deliver its proposed output of 2.1m service contacts within the proposed funding allowances. We expect NGGD to progress with this initiative, although we will not hold NGGD to account for the delivery of its proposed secondary deliverable.
- 4.19. We would like to encourage GDNs to share the results of their respective activities to understand their effectiveness and enable the adoption of best practice. We propose to use the DRS as a mechanism to enable and reward the sharing of best practice (which we will set out in the relevant DRS governance documents).

Incentivising CO activities through stakeholder element of broad measure

- 4.20. We expect GDNs to play an active role in addressing a number of social issues, including, but not limited to, fuel poverty and helping to address the risks associated with carbon monoxide poisoning. Across a range of issues we therefore expect GDNs to work collaboratively and strategically with different stakeholders to ensure the right solution is implemented by the most appropriate agency.
- 4.21. We intend to use the stakeholder engagement element of the broad measure of customer service (see Chapter 3), to reward those GDNs that demonstrate these behaviours. More specifically, we will place a weighting on the initiatives that best serve specific interests of challenging groups of customers/communities/future stakeholders and resulted in measurable benefits (eg CO awareness initiatives) in determining the allocation of reward.

5. Connections

Chapter Summary

In Initial Proposals we set out our proposals in relation to connection standards of performance and, in particular, in relation to standards of performance for entry connections.

Summary of Initial Proposals and respondents' views

- 5.1. In IP, we welcomed the GDNs' commitments to maintain or improve standards of service for gas demand connections. We also welcomed GDNs' commitments to introduce voluntary standards for distributed gas connections. We explained that we expected GDNs to work together, in consultation with distributed gas customers, to agree voluntary standards of service for distributed gas connections. We stated that we expected arrangements to include:
- voluntary standards of service for the issuing of quotations, the scheduling of works and for the completion of works;
 - penalty payments to be paid where voluntary standards are not met; and
 - reporting arrangements.
- 5.2. We explained that we would take into account the extent to which GDNs have facilitated the connection of distributed gas, including efforts to develop voluntary standards, as part of our evaluation of Discretionary Reward Scheme (DRS) submissions.
- 5.3. No respondents commented on our proposals.

Our decision

- 5.4. As set out in IP and summarised above, we expect GDNs to develop voluntary standards for distributed gas connections, and we will incentivise the development through the DRS. We will also continue with the current connection standards of service.¹⁸

¹⁸ The standards are set out in the Gas Standards of Performance Regulations. [See Guidance on Guaranteed Standards of Performance and Standard Conditions, Special Licence Condition D10](#)

6. Safety

Chapter summary

This chapter summarises our decision on network safety outputs.

Introduction

- 6.1. In our IP document, we set out our proposed outputs and secondary deliverables in relation to:
 - the level of risk removed by the iron mains risk reduction programme (IMRRP)
 - other primary safety risk outputs, namely emergency response performance, the management of emergency repairs and the approval of safety cases in relation to the Gas Safety (Management) Regulations (GS(M)R) and the Control of Major Accident Hazards (COMAH).
- 6.2. We also set out how we would undertake our assessment of GDNs' safety performance at the end of the review period.
- 6.3. In this chapter, we first set out our decision on safety risk improvement in relation to IMRRP. We then set out our decision on other primary outputs. In Appendix 3 we set out our decision on how we will undertake our assessment of GDNs' safety output performance at the end of the RIIO-GD1 period together with the assessment of secondary deliverables for asset health, criticality and risk.

Iron mains safety risk reduction

Summary of our Initial Proposals

- 6.4. We described the HSE's new three tier approach to iron mains risk reduction programme (IMRRP). In short, for tier 1 mains GDNs have to replace the same length of mains as under the old policy but can prioritise replacement based on an assessment of a wide range of benefits, including reductions in gas losses and operating costs, as well as improvements in safety risk.¹⁹ Around 80 per cent of the iron mains population are tier 1 mains. For tiers 2 and 3, in general, the new policy only requires GDNs to replace mains if the

¹⁹ The HSE three tier approach covers all iron mains within 30m of a property. Tier 1 are mains less than or equal to 8" in diameter, tier 2 are mains greater than 8" and less than 18" in Diameter and tier 3 are mains equal to and greater than 18" in diameter.

pipe replacement is justified in cost benefit terms. The exception is high risk tier 2 mains, where there is a mandatory requirement for replacement.²⁰

- 6.5. The HSE has also stated that it will undertake a more fundamental review of the Pipeline Safety (Amendment) Regulations 2003 (PSR) as they relate to iron mains, and has indicated to us that it will complete its review in time for our mid-period review. We set out in our Finance and Uncertainty Supporting Document how we will accommodate any changes to PSR at the mid period review.
- 6.6. In IP, we disallowed some of the replacement activity proposed by the GDNs for tier 1 based on two factors: our more conservative assumptions for the growth of tier 1 assets, and our assumption that GDNs would not ramp down activity towards the end of 2032.
- 6.7. For tier 2 above the threshold, we made changes to WWU’s proposed risk threshold with a resulting reduction to its proposed replacement activity. For tier 2 and 3 iron mains which are not subject to a mandatory requirement, we disallowed substantive elements of NGGD, WWU and SGN’s workload as we did not consider that their investment plans conformed to our investment appraisal guidance. In particular, we did not consider that it conformed to our proposal to only fund investment where it has a payback within 24 years from the start of RIIO-GD1 (by 2037). This reflects the option value of deferring investment. However, we stated that we would reconsider GDNs proposed investment plans where they resubmitted their plans in a form consistent with our guidance.
- 6.8. We made associated reductions to GDNs proposed improvements in safety risk to reflect our changes to their investment programmes. In association with this we proposed a number of secondary deliverables associated with this.

Summary of respondents’ views

- 6.9. Both NGGD and WWU contest our use of a 24 year payback period to evaluate non mandatory tier 2 and 3 mains programme. NGGD considered that the proposed truncation, to reflect the option value of deferred investment, is based on unreasonable assumptions. WWU accepts that gas network flows may decline over time but the network assets will need to be retained, and it supports a 45 year payback period.

²⁰ For a full description of the HSE policy, see: the HSE’s [“10 Year Review of the Health and Safety Executive’s enforcement policy for the replacement of iron gas mains”](#)

- 6.10. NGGD also expressed concerns about the part funding of the London medium pressure (MP) strategy, and our apparent disregard for the integrated nature of the programme. NGGD also noted the disparity between allowed workloads for NGN and its GDNs, and considered that we had inconsistently applied our approach to investment appraisal.
- 6.11. In addition, NGGD noted that we had disallowed all condition based mains replacement (ie replacement which is not captured by the HSE’s iron mains risk reduction programme). NGGD and WWU also contested our proposed changes to their risk removed primary output measures. In particular, they noted that our proposed changes – based on the proportionate change in workload – failed to accurately reflect the impact on risk of the proposed workload reductions.
- 6.12. NGGD also noted that our table in IP referring to the “*percentage reduction in mains off risk from proposed to adjusted lengths*” calculated the workload adjustments across all mains categories and not just iron mains qualifying under the IMRRP. It suggested that the risk associated with tier 2 mains captured by the revenue driver should not be included in the baseline risk output commitment because of the uncertainty of the workload volume in this category.
- 6.13. Both SGN and NGN supported our proposed approach to appraising tier 2 and 3 non mandatory investment, and specifically the truncation of the payback period to reflect uncertainty in relation to network flows, and asset data.
- 6.14. NGGD requested greater clarity on how outputs will be assessed and valued in the end of period review of safety outputs. In particular, with respect to iron mains replacement where we previously indicated we would not financially reward or penalise for performance against this output.

Our decision

Mains and services replacement

- 6.15. We will retain our approach to appraising non mandatory mains on the basis of a 24 year period from the start of RIIO-GD1 (by 2037) to take into account uncertainty over future network use, eg as characterised by DECC’s Heat Strategy, as well as asset data quality. Using a shorter payback period results in more opex solutions than capex solutions, and allows more marginal investment decisions to be deferred until the current uncertainty over future network use is fully or at least partially resolved.
- 6.16. We accept that there is uncertainty over the implicit option value that should be incorporated into the investment appraisal. However, for the reasons we set out in Appendix 6 of our IP Outputs Supporting Document, we consider that an option value of around 20 per cent of the capital value (which

corresponds to using a 24 year asset life in the appraisal) represents a reasonable estimate for the deferral option value associated with low pressure network investment decisions.

- 6.17. As set out above, both WWU and NGGD contest our approach to incorporating uncertainty within investment appraisal (through the truncation of the investment period). However, both have resubmitted asset investment plans based on a 24 year payback period (with the exception of NGGDs MP strategy). SGN also resubmitted its proposed mains workload to address our concerns with how it had incorporated truncated payback period in its appraisal.
- 6.18. We set out our changes to mandatory and discretionary²¹ replacement volumes in table 6.1 below. The changes for discretionary mains work are based on the CBA resubmissions from NGGD, SGN and WWU. We do not propose any changes to NGN’s discretionary mains replacement volumes or output measures relative to IP. However, we restate NGN allowed volumes and output measures for completeness.
- 6.19. Following IP, GDNs restated their mandatory and discretionary workload proposals and their revised figures are reflected in tables 6.1 (mains abandonment) and 6.2 (replacement services workload) below, along with our proposed allowances. We explain the derivation of our allowances in Annex 3 of the Cost Efficiency Supporting Document.

²¹ Discretionary replacement includes tier 2B iron mains (below risk threshold), tier 3 iron mains, iron mains more than 30 metres from property, other mains, associated services, and multi-occupancy buildings (MOBs).

Table 6.1: Mains abandoned workload

| | Submitted abandoned lengths ¹ (km) | | | | | | | | |
|------------------|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| | EoE | Lon | NW | WM | NGN | Sc | So | WWU | Industry |
| Tier 1 | 4,716.1 | 2,674.6 | 3,400.1 | 2,564.9 | 4,111.0 | 1,826.0 | 5,177.9 | 2,629.3 | 27,099.9 |
| Tier 2A | 16.6 | 40.0 | 51.6 | 28.9 | 81.5 | 5.2 | 32.3 | 37.5 | 293.8 |
| Tier 2B | 117.5 | 76.8 | 76.3 | 52.4 | 163.4 | 146.9 | 208.6 | 200.1 | 1,042.2 |
| Tier 3 | 44.9 | 246.8 | 93.6 | 33.2 | 40.0 | 46.7 | 92.7 | 1.0 | 599.0 |
| Iron mains >30 m | 91.7 | 64.7 | 43.6 | 66.1 | 0.0 | 40.2 | 16.2 | 53.3 | 375.8 |
| Steel | 193.0 | 115.8 | 335.2 | 137.2 | 420.2 | 429.4 | 396.9 | 570.2 | 2,597.9 |
| Other | 0.0 | 7.0 | 64.6 | 0.0 | 0.0 | 4.1 | 63.6 | 2.4 | 141.7 |
| Total | 5,180.0 | 3,225.8 | 4,065.0 | 2,882.8 | 4,816.2 | 2,498.4 | 5,988.3 | 3,493.8 | 32,150.2 |

| | Allowed abandoned lengths (km) | | | | | | | | |
|------------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| | EoE | Lon | NW | WM | NGN | Sc | So | WWU | Industry |
| Tier 1 | 4,657.7 | 2,613.7 | 3,296.3 | 2,575.1 | 3,706.9 | 1,837.5 | 5,222.0 | 2,637.8 | 26,546.9 |
| Tier 2A | 16.6 | 40.0 | 51.6 | 28.9 | 81.5 | 5.2 | 32.3 | 37.5 | 293.8 |
| Tier 2B | 90.4 | 57.8 | 65.5 | 43.4 | 163.5 | 114.8 | 164.1 | 199.7 | 899.2 |
| Tier 3 | 33.6 | 176.2 | 78.1 | 26.8 | 40.0 | 35.7 | 72.5 | 1.0 | 463.9 |
| Iron mains >30 m | 69.2 | 46.6 | 36.4 | 52.7 | 0.0 | 31.1 | 14.0 | 53.2 | 303.2 |
| Steel | 176.0 | 98.3 | 320.9 | 125.4 | 389.8 | 421.3 | 381.7 | 570.9 | 2,484.3 |
| Other | 0.0 | 7.0 | 64.6 | 0.0 | 0.0 | 3.0 | 48.9 | 2.4 | 126.0 |
| Total | 5,043.6 | 3,039.7 | 3,913.3 | 2,852.2 | 4,381.7 | 2,448.5 | 5,935.5 | 3,502.5 | 31,117.1 |

% reduction

| | | | | | | | | | |
|--------------------|-----|-----|-----|-----|-----|-----|-----|----|------------|
| iron mains ≤ 30m | -2% | -5% | -4% | 0% | -9% | -2% | 0% | 0% | -3% |
| Total ² | -3% | -6% | -4% | -1% | -9% | -2% | -1% | 0% | -3% |

¹Submitted adjusted workload includes transfers between activities eg transfer of capitalised replacement from capex to repex.

²All mains workload includes iron, steel and other material mains.

Table 6.2: Replacement services

| | Submitted domestic service renewal ¹ (number of services) | | | | | | | | |
|--------------------------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|
| | EoE | Lon | NW | WM | NGN | Sc | So | WWU | Industry |
| Mains related | 208,477 | 137,856 | 189,820 | 138,839 | 213,908 | 91,225 | 328,280 | 162,184 | 1,470,588 |
| Renew after escape | 28,427 | 33,688 | 41,428 | 23,874 | 61,776 | 19,386 | 73,106 | 47,561 | 329,247 |
| Not mains or emergency related | 33,520 | 18,808 | 29,784 | 34,384 | 15,675 | 8,448 | 10,441 | 48,001 | 199,062 |
| Total | 270,425 | 190,352 | 261,031 | 197,097 | 291,359 | 119,060 | 411,827 | 257,745 | 1,998,896 |

| | Allowed domestic service renewal ¹ (number of services) | | | | | | | | |
|--------------------------------------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|
| | EoE | Lon | NW | WM | NGN | Sc | So | WWU | Industry |
| Mains related | 203,724 | 132,918 | 183,007 | 137,629 | 193,562 | 89,637 | 326,141 | 162,625 | 1,429,245 |
| Renew after escape | 29,217 | 32,666 | 36,470 | 25,148 | 45,006 | 14,675 | 60,718 | 30,908 | 274,809 |
| Not mains or emergency related | 10,077 | 6,261 | 7,589 | 6,223 | 8,889 | 1,481 | 9,729 | 8,142 | 58,391 |
| Total | 243,018 | 171,845 | 227,066 | 169,001 | 247,458 | 105,794 | 396,588 | 201,675 | 1,762,445 |
| % reduction in total service renewal | -10% | -10% | -13% | -14% | -15% | -11% | -4% | -22% | -12% |

¹Excludes service test and transfer.

6.20. Our allowed mandatory iron mains abandonment workloads, as a result of clarification questions and GDNs' restated proposals, provides for the abandonment of between 38 per cent and 40 per cent of the GDNs' total qualifying iron mains population. The GDNs' April 2012 business plans requested replacement volumes of between 36 per cent and 62 per cent of the qualifying iron mains population.

6.21. Table 6.3 shows iron mains abandonment as a proportion of qualifying iron mains population for the GDNs' restated proposals and our allowed workload volumes.

Table 6.3: Proportion of requested and allowed iron mains abandonment volumes

| | EoE | Lon | NW | WM | NGN | Sc | So | WWU | Industry |
|---|--------|-------|-------|-------|--------|-------|--------|-------|---------------|
| Iron mains population (tiers 1, 2 and 3) (km) | 12,169 | 7,643 | 9,083 | 7,106 | 10,023 | 5,091 | 13,757 | 7,238 | 72,110 |
| Requested mandatory iron mains replacement | 4,895 | 3,038 | 3,622 | 2,679 | 4,396 | 2,025 | 5,512 | 2,868 | 29,035 |
| Allowed replacement (km) | 4,798 | 2,888 | 3,491 | 2,674 | 3,992 | 1,993 | 5,491 | 2,876 | 28,204 |
| Proportion of iron mains population replacement requested over RIIO-GD1 (%) | 40.2% | 39.8% | 39.9% | 37.7% | 43.9% | 39.8% | 40.1% | 39.6% | 40.3% |
| Proportion of iron mains population replacement allowed over RIIO-GD1 (%) | 39.4% | 37.8% | 38.4% | 37.6% | 39.8% | 39.1% | 39.9% | 39.7% | 39.1% |

NGGD’s London Medium Pressure (MP) strategy

- 6.22. We have considered NGGD’s London medium pressure (MP) strategy and we have assessed the plan consistent with our approach to assessing all other discretionary mains replacement.
- 6.23. We acknowledge that NGGD has undertaken a detailed assessment to inform its MP strategy. However we believe some of the assumptions NGGD has used to justify the project are unreasonable. In particular, our analysis indicates that NGGD has assumed the avoidance of a fatal incident around 40 times the nationally accepted average. We also have concerns that assumptions for property rebuild costs are high.
- 6.24. In appraising NGGD’s MP strategy, we have used a risk value ten times the assumed national average fatality occurring as a result of mains failure (consistent with HSE’s concept of disproportionate cost), and based on this, NGGD’s MP strategy does not demonstrate a positive net present value within the required period (by 2037).
- 6.25. However, we accept that NGGD will need to replace some mains within this timescale, and we have allowed 70 per cent of their proposed workload based on our CBA approach (where we count benefits within a 24 year period). We set out our approach in detail in Chapter 8 and Appendix 3 of the Cost Efficiency supporting document.

Mains replacement level of risk removed – primary output

- 6.26. In calculating adjustments to the GDNs' iron mains risk removal proposals as a result of mains abandonment workload adjustments, we used the proposed workloads and associated risk as submitted in the GDNs' April 2012 business plans. This is necessary in the absence of updated risk removal proposals corresponding with GDNs' restated workload volumes in October 2012.
- 6.27. Based on GDNs' responses, we have reviewed our methodology for adjusting risk values following changes in allowed workload, and accept that the average mains risk score may vary significantly between the three iron mains diameter tiers. As a result, we have calculated a level of risk for allowed workload by using the corresponding average risk for GDNs' proposed abandonment within each tier.
- 6.28. We also accept that percentage of mains 'off risk' should reflect those mains having a risk score (eg qualifying iron mains under the IMRRP) as opposed to mains of all categories as applied in IP. We have therefore adjusted primary and secondary outputs on this revised basis.
- 6.29. We confirm that the primary risk removal output will include risk relating to tier 2 mains above the risk action threshold. Any under or over delivery of risk removal as a result of mandatory workload changes from those forecast, will be taken in to account when assessing performance at the end of the RIIO-GD1 period.
- 6.30. WWU contested the figures we used as a baseline for mains risk from their April business plan data template. We have revised the baseline figures following further information provided by WWU.
- 6.31. Table 6.4 sets out our decision in relation to improvements in iron mains risk reduction.

Table 6.4: Summary of primary risk reduction based on allowed iron mains workload volume

| | | EoE | Lon | NW | WM | NGN | Sc | So | WWU |
|---|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Forecast iron mains risk at beginning of RIIO-GD1 | (incidents /year x 10 ⁻⁶) | 341,223 | 277,116 | 365,312 | 250,929 | 276,341 | 114,062 | 279,473 | 215,324 |
| Forecast iron mains risk at end of RIIO-GD1 | (incidents /year x 10 ⁻⁶) | 146,780 | 124,461 | 178,321 | 106,023 | 154,852 | 76,470 | 175,692 | 111,324 |
| GDN forecast risk reduction over RIIO-GD1 period | (incidents /year x 10 ⁻⁶) | 194,443 | 152,655 | 186,991 | 144,906 | 121,488 | 37,592 | 103,781 | 104,000 |
| Ofgem adjusted risk reduction over RIIO-GD1 period (FP) | (incidents /year x 10 ⁻⁶) | 192,567 | 102,281 | 154,428 | 131,394 | 111,191 | 44,277 | 137,287 | 98,727 |
| GDN Proposed risk reduction over RIIO-GD1 period | % change | 57% | 55% | 51% | 58% | 44% | 33% | 37% | 48% |
| Adjusted risk reduction over RIIO-GD1 period (FP) | % change | 56% | 37% | 42% | 52% | 40% | 39% | 49% | 46% |

Iron mains – secondary deliverables

- 6.32. In IP, we identified the following secondary deliverables supporting the risk removal primary output: (i) occurrences of gas in buildings; (ii) occurrences of cast iron/spun iron mains fractures and ductile main failures; (iii) length of main 'off risk'; (iv) and asset health and risk metrics (which we address in the reliability output chapter).
- 6.33. We have made changes to the secondary deliverables consistent with the revised methodology applied to the primary output.
- 6.34. In addition to the secondary deliverables proposed in IP, we have decided to identify the number of steel services allowed for renewal which represents a significant investment category.

Other safety risk primary outputs and secondary deliverables

Summary of our Initial Proposals

6.35. In IP, we identified the following primary outputs: (i) emergency response; (ii) management of repairs; (iii) major accident hazard prevention (MAHP). In addition to the secondary deliverables relating to mains replacement, we set a 12 hour standard for repair response as the repair management output.

Summary of respondents' views

- 6.36. WWU stated that it would be unable to sustain its major accident hazard output commitment given the reduction in allowed asset integrity expenditure proposed in IP.
- 6.37. SGN and NGGD stated that they consider the volume of mains replacement directly impacts on their repair management performance as measured by repair risk (and therefore our changes to the mains replacements programme should result in a less demanding repair risk output).
- 6.38. NGGD did not agree with the repair output measure baseline, because using data from a relatively mild winter makes networks more likely to underperform against this measure in subsequent years. WWU suggested the baseline should use the average of a number of years or alternatively use a weather normalised value.
- 6.39. SGN suggested that there should be a "level playing field" with respect to the requirement on all networks to perform against the repair management secondary deliverable, measuring the percentage of escape preventions undertaken within 12 hours.

Our decision

Emergency response – primary output

6.40. We confirm our IP position in relation to the above, ie for emergency response, we will retain the current 97 per cent standard which requires GDNs to attend 97 per cent of reported escapes within 1 hour for uncontrolled escapes, and two hours for controlled escapes.

Management of repairs – primary output

- 6.41. We proposed in IP to require GDNs to maintain the repair risk scores for the last reported year, 2012-13 as set out in GDNs' 2013 RRP return. Following a review of GDNs responses, we have decided to retain this position as our output measure for RIIO-GD1.
- 6.42. In making this decision, we acknowledge that setting the target based on an historical average could smooth for exogenous effects, eg the effect of weather on repair risk. However, we do not consider that we have access to sufficiently robust historical data to set the target based on historical averages. In addition, we do not currently have sufficient understanding of the relationship between weather and risk data to adjust the baseline or GDNs reported data. We welcome proposals from GDNs to help improve the understanding of the relationship between repair risk and weather, with a view to taking into account this factor in evaluating future output performance.
- 6.43. We also acknowledge that repair risk may be affected by changes to mains replacement workload volumes. However, we also expect the decreasing population of iron mains to improve repair risk over time. Thus, our approach of setting the output measure based on 2012-13 performance could equally understate expected performance going forward.
- 6.44. We note that the performance in meeting the GS(M)R 12 hour standard to prevent escapes varies between GDNs. We believe this GS(M)R requirement is a relevant measure for the management of repairs, in conjunction with repair risk performance and the overall delivery of an efficient emergency service. We expect GDNs to deliver the 12 hour standard outputs as proposed in their business plans whilst ensuring compliance with statutory requirements.²²

Major Accident Hazard Prevention (MAHP) – Primary Output

- 6.45. We have allowed in full WWU's re-submitted workload and expenditure proposals for LTS pipelines, enabling them to continue the safe operation of the local transmission system and fulfil their duties under MAHP. We consider our final proposals allow all GDNs to achieve their statutory obligations.

²² The requirement to meet the 12 hour escape prevention standard is detailed in the Gas Safety (Management) Regulations (1996) GS(M)R 7(4) and 7(10), with further clarification in HSE's circular SPC/ENFORCEMENT/140

Sub-deduct networks

- 6.46. In GDPCR1 Final Proposals, we expressed concern at the lack of clarity over who is responsible for sub-deduct networks and we therefore provided GDNs with revenue allowances to undertake non-technical surveys of sub-deduct networks in their geographical areas.
- 6.47. Subsequently, we indicated that that we would consider any application for funding for related efficiently incurred costs under an uncertainty mechanism in our RIIO-GD1 Final Proposals.
- 6.48. We have held discussions with the GDNs and they have submitted proposals to enable them to:
- undertake suitable efficient risk mitigation measures such as re-engineering, replacement or elimination of the pipes at risk; and
 - establish that a third party formally accepts full responsibility for them.
- 6.49. We have therefore decided to provide ex-ante allowances for GDNs to enable all sub-deduct networks to be evidenced as being 'off risk' by the end of RIIO-GD1. Further details are provided in Appendix 3 of our Cost Efficiency Supporting Document.

7. Reliability

Chapter summary

This chapter summarises our decision in relation to network reliability outputs.

Introduction

- 7.1. In IP we set out our proposed outputs and secondary deliverables in relation to:
- loss of supply, eg number and duration of interruptions
 - network capacity, eg achieving 1 in 20 peak day supply obligation and connecting new supplies
 - network reliability, eg offtake meter error reports and fault reporting
- 7.2. We also set out how we would undertake our end of period assessment of GDNs' performance in relation to asset health metrics and capacity secondary deliverables. In the following sections, we set out our respondents' views on our IP and our decision in relation to these areas.

Loss of supply

A summary of our Initial Proposals

- 7.3. In IP, we set target levels for the number and duration of interruptions. We stated that we had adjusted the GDNs' proposed number of interruptions for our proposed decrease in tier 1 mains (defined as mains of 8 inches in diameter or less), as most services and therefore interruptions are associated with tier 1 mains. We also made an equivalent reduction to the overall duration of interruptions equivalent to the proportionate change in tier 1 workload.
- 7.4. We explained that the volume of unplanned interruptions is primarily driven by the number of service condition emergency reports, which takes into account our allowed mains and services replacement workload and our proposed services deterioration rate.

Respondents' views

- 7.5. In general, the GDNs contested our changes. For example, NGGD did not agree with our proposed changes to workloads, or our proposed changes to deterioration rates, and the resulting assumed level of interruptions. NGGD

considered that we should accept its proposed deterioration rates. WWU also did not agree to our proposed reductions to deterioration rates and our resulting reductions in unplanned interruptions.

Our decision

- 7.6. We have adjusted the GDNs' proposed target number of interruptions on the same basis as in IP, ie we have adjusted the GDNs submission pro rate to our change in workload. Thus, the final values have changed relative to IP as a result of changes in allowed tier 1 workload volumes.
- 7.7. We have capped our assumption for the deterioration rate of non-polyethylene services at the upper quartile of GDNs' proposed rates. Further detail of our allowed level of service condition reports is given in Chapter 6 of our Cost Efficiency Supporting Document.
- 7.8. GDNs proposed target number and duration of interruptions and our decision are set out in table 7.1.
- 7.9. We will assess GDNs' performance against these targets as part of our end of period review (see Appendix 3.)

Table 7.1: Loss of supply volumes and duration (target over RIIO-GD1)

| Primary Output (associated with non-contractual interruptions) | | | EoE | Lon | NW | WM | NGN | Sc | So | WWU |
|---|----------------------|-----------------------------|----------------|----------------|----------------|----------------|----------------|---|----------------|----------------|
| No. of planned interruptions | GDN proposed | Number of | 657,052 | 410,315 | 547,598 | 389,957 | 447,584 | 270,680 | 655,520 | 446,886 |
| No. of unplanned interruptions | GDN proposed | Number of | 100,255 | 88,166 | 107,940 | 61,403 | 85,538 | 21,888 | 82,680 | 125,219 |
| Total interruptions | GDN proposed | Number of | 757,307 | 498,481 | 655,538 | 451,360 | 533,122 | 292,568 | 738,200 | 572,105 |
| No. of planned interruptions | Ofgem allowed | Number of | 657,504 | 409,561 | 551,735 | 401,054 | 403,585 | 282,335 | 686,526 | 451,235 |
| No. of unplanned interruptions | Ofgem allowed | Number of | 106,922 | 88,605 | 101,591 | 70,575 | 67,263 | 17,217 | 69,417 | 90,169 |
| Total interruptions | Ofgem allowed | Number of | 764,426 | 498,166 | 653,326 | 471,629 | 470,849 | 299,553 | 755,943 | 541,405 |
| No. of planned interruptions | | % change | 0.1% | -0.2% | 0.8% | 2.8% | -9.8% | 4.3% | 4.7% | 1.0% |
| No. of unplanned interruptions | | % change | 6.7% | 0.5% | -5.9% | 14.9% | -21.4% | -21.3% | -16.0% | -28.0% |
| Total interruptions | | % change | 0.9% | -0.1% | -0.3% | 4.5% | -11.7% | 2.4% | 2.4% | -5.4% |
| Duration of planned interruptions | GDN proposed | (mins - millions of) | 307.01 | 256.15 | 284.05 | 194.29 | 242.28 | Data not submitted. Average annual duration 2009-2012 allowed | | 91.16 |
| Duration of unplanned interruptions | GDN proposed | (mins - millions of) | 46.51 | 110.01 | 82.66 | 41.64 | 79.73 | | | 62.61 |
| Total interruptions | GDN proposed | (mins - millions of) | 353.52 | 366.16 | 366.71 | 235.93 | 322.01 | | | 153.77 |
| Duration of planned interruptions | Ofgem allowed | (mins - millions of) | 307.23 | 255.68 | 286.20 | 199.82 | 218.46 | 97.90 | 245.19 | 92.05 |
| Duration of unplanned interruptions | Ofgem allowed | (mins - millions of) | 49.60 | 110.56 | 77.80 | 47.86 | 62.70 | 120.57 | 181.15 | 45.08 |
| Total interruptions | Ofgem allowed | (mins - millions of) | 356.83 | 366.24 | 363.99 | 247.68 | 281.16 | 218.47 | 426.34 | 137.14 |

Network capacity

Summary of our Initial Proposals

- 7.10. We set out our intention to require GDNs to maintain sufficient capacity to meet a 1 in 20 peak day demand requirement. In relation to our NTS Offtake requirement, we stated that we would set offtake capacity as the lower of GDNs' forecasts or constant offtake volumes. We also stated that we would update GDNs' NTS offtake volumes for their latest capacity bookings.
- 7.11. In their April business plans, all GDNs set out their expectations of falling peak day demand over the RIIO-GD1 period with the exception of SGN which forecast a marginal increase. Only SGN requested incremental capacity expenditure. In relation to four capex projects requested by SGN, we based our allowances on the assumption that SGN could secure interruptible contracts (IC) to meet its capacity requirements. We based the annual contract amounts on the annuitised avoided capital cost of the capacity expenditure based on a 20 year annuity.
- 7.12. We also proposed to accept the GDNs' forecast of approximately 500,000 connections over the RIIO-GD1 period.

Summary of respondents' views

- 7.13. NGGD stated that it had increased its NTS Exit Capacity bookings, and thus requested an increase in our proposed assumed level of offtake. It also forecast constant capacity bookings over the RIIO-GD1 period. NGN also submitted revised offtake levels taking into accounts its latest capacity bookings.
- 7.14. In its response to funding of its incremental capacity requirements, SGN considered that given its recent experience of procuring interruptible capacity, it would not be reasonable for us to assume that all new capacity is met through IC. It also proposed to defer one of the four requested projects (Pathhead) to an uncertainty mechanism (our reopener mechanism for the connection of new large loads).

Our decision

- 7.15. In relation to NTS Exit Capacity bookings, we have accepted NGGD and NGN's proposed revisions to their NTS offtake. Our revised approach ensures that we take into account the latest data in relation to booked offtake capacity. In broad terms, our decision is based on GDNs' booked capacities over the short term, and held constant thereafter. We set out allowed offtake volumes in Appendix 8.

- 7.16. In relation to the capacity related investment, we have decided to fund SGN for the capex costs for two of its four schemes (Moray and Logerait) where there are currently no interruptible contracts, and uncertain prospects for securing interruptible capacity. For the expected incremental capacity requirement which is currently met by an IC but which will expire during RIIO-GD1 (project Foudland), we have retained our IP position, namely we have decided to fund SGN on the basis of the annuitised avoided capital cost of the scheme based on a 20 year annuity. As per SGN's proposal we have subjected the Pathhead scheme to our reopener mechanism for the connection of new large loads. We describe this mechanism in our Finance and Uncertainty supporting document.
- 7.17. We set out the required capacity outputs in Appendix 7, and our proposed approach to the end of period review in Appendix 3.
- 7.18. We did not receive any responses relating to the forecast number of new connections. (The number of proposed new connections is summarised in Appendix 8 of the Cost Efficiency supporting document.)

Network reliability

Summary of our Initial Proposals

- 7.19. We noted that the primary output for network reliability is maintaining levels of operational performance across the network, and we identified the following secondary deliverables (as leading indicators): the number and value of offtake meter errors; number and duration of telemetered faults; maintenance of network records; decommissioning of gas holders; and asset health/capacity indicators. We set out our final decision in relation to the proposed secondary deliverables below with the exception of asset health/capacity indicators. We address our proposals in relation to asset health/capacity indicators in Appendix 8.

Summary of respondents' views

- 7.20. Respondents generally supported the proposed outputs and (where appropriate) output levels. A number of GDNs set out proposed improvements to the measurement of the secondary deliverables. A shipper supported the proposed reporting of offtake meter errors and the associated reputational incentive.
- 7.21. A number of GDNs highlighted our reduction in capital expenditure and the corresponding effect on network health metrics. WWU noted that our proposed improvement in its meter accuracy performance relative to plan was unfunded.

Our decision

7.22. We set out our proposed secondary deliverables and levels (where appropriate) below. We note that the proposed levels of secondary deliverables are to inform our assessment of the primary output (maintaining operational performance).

Number and value of offtake meter error reports

7.23. In IP we considered that we should set a common industry standard in relation to meter accuracy consistent with NGGD’s proposed performance of 0.1 per cent of total throughput. In relation to WWU’s point that the proposed output level is unfunded, we note that a number of GDNs achieve this performance level, and consider that GDNs should deliver this performance level within our base cost allowances.

Number and duration of telemetered faults

7.24. At IP we proposed to adopt GDNs’ proposed secondary deliverables in relation to the response to telemetered faults on AGIs, as well as pressure systems safety regulations (PSSR) faults, and we confirm these decisions at FP. These are set out in tables 7.2 and 7.3.

7.25. We will assess GDNs’ performance against these targets as part of our end of period review (see Appendix 3.)

Table 7.2: Telemetered faults

| Fault * Duration / No. of telemetered AGIs - "Now Faults" (hrs) | 2011 (actuals) | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|----------------|------|------|------|------|------|------|------|------|
| EoE | | | | | | | | | |
| Lon | 103 | 127 | 123 | 119 | 116 | 112 | 108 | 105 | 101 |
| NW | | | | | | | | | |
| WM | | | | | | | | | |
| NGN | 189 | 211 | 196 | 181 | 166 | 151 | 136 | 128 | 120 |
| SC | 390 | 238 | 238 | 238 | 238 | 238 | 238 | 238 | 238 |
| SO | 484 | 134 | 134 | 134 | 134 | 134 | 134 | 134 | 134 |
| WWU | 114 | 181 | 168 | 153 | 141 | 161 | 182 | 202 | 223 |

Table 7.3: Pressure Systems Safety Regulations (PSSR) faults

| | | | | | | | | | |
|---|----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Faults as percentage of inspections - PSSR A1 and A2 faults | 2011 (actuals) | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| EoE | 8% | 8% | 8% | 7% | 6% | 6% | 6% | 5% | 5% |
| Lon | 6% | 9% | 9% | 8% | 8% | 7% | 6% | 6% | 5% |
| NW | 20% | 18% | 16% | 16% | 15% | 13% | 13% | 12% | 11% |
| WM | 7% | 6% | 6% | 6% | 5% | 5% | 5% | 5% | 5% |
| Faults/ No. of AGIs - PSSR A1 and A2 faults | 2011 (actuals) | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| NGN | 0.53 | 0.51 | 0.51 | 0.50 | 0.50 | 0.49 | 0.49 | 0.48 | 0.47 |
| SC | 0.435 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 | 0.356 |
| SO | 0.326 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 | 0.209 |
| WWU | 0.07 | 0.073 | 0.072 | 0.071 | 0.07 | 0.072 | 0.074 | 0.076 | 0.078 |

Decommissioning of gas holders

- 7.26. We confirm our proposal at IP to fund GDNs for the phased demolition of gas holders over a 16 year period which we propose to set as a secondary deliverable (see Table 7.4).
- 7.27. As with other reliability outputs and secondary deliverables, we will assess GDNs' performance against these targets as part of our end of period review (see Appendix 3.)

Table 7.4: Gasholder demolition proposals for RIIO-GD1

| GDN | No. of holders at 2012-13 | No. to be demolished ¹ | |
|-----|---------------------------|-----------------------------------|-----------------------|
| | | GDN proposal | Ofgem IP/ FP decision |
| EoE | 59 | 44 | c. 29-30 |
| Lon | 65 | 37 | c. 32-33 |
| NW | 70 | 43 | c. 35 |
| WM | 9 | 6 | c. 4-5 |
| NGN | 47 | 23 | c. 23-24 |
| SC | 22 | 19 | c. 11 |
| SO | 89 | 67 | c. 44-45 |
| WWU | 15 | 15 | c. 7-8 |

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

Measuring performance in relation to asset health, risk and capacity metrics

Summary of Initial Proposals

- 7.28. We set out our intention to set network output measures (NOMs) for RIIO-GD1, and we required GDNs to review the proposed NOMs set out in their April 2012 business plans for our proposed changes in workloads. We also stated that we would undertake further work with industry to improve comparability of NOMs across industry.
- 7.29. In Appendix 10 of our IP Outputs Supporting Document, we also set out our proposed approach to undertaking the end of period assessment of asset health, capacity secondary deliverables, and safety risk outputs.
- 7.30. GDNs broadly supported our proposed approach to the end of period review. We address their specific comments in Appendix 3.

Our decision

- 7.31. We set out in Appendix 3 our proposed approach to the end of period review of network output measures. Specifically, in the appendix we note that we have decided to apply a reward of 2.5 per cent of additional costs associated with a material over-delivery of outputs if the GDN is able to robustly justify that the over-delivery is in the consumer interest. Similarly, we will apply a penalty of 2.5 per cent of the avoided costs associated with a material under-delivery of the output if the GDN is unable to robustly justify that the under-delivery is in the consumer interest. Where there is substantial unjustified under-delivery we may consider whether it is appropriate also to use our powers relating to enforcement of licence conditions.
- 7.32. We will continue to work with GDNs on the development of comparable NOMs. Since IP we have held working group meetings to continue analysis of the NOMs outputs. The GDNs have now produced a collaborative view of criticality scoring which they have applied consistently to piggable (OLI1) pipelines.
- 7.33. We have set out a timeline that requires the GDNs to have in place a common health and criticality reporting methodology across all of their assets by 31 March 2013. We will require the GDNs to submit their updated NOM proposals on this consistent basis once this work is complete in time for the start of RIIO-GD1.
- 7.34. Figure 7.1 sets out the total asset risk profiles as submitted by the GDNs for the RIIO-GD1 period. The graphs present the change in the level of risk between the start of RIIO-GD1 and the end of RIIO-GD1 with and without intervention. We will require the GDNs to deliver the difference or delta

between the risk output at the end of RIIO-GD1 with the intervention they have proposed and the risk output without intervention.

- 7.35. Once the GDNs have finalised their common methodology we will require them to rebase their current submissions using the agreed methodology

Figure 7.1 RIIO-GD1 total asset risk profiles for each of the GDNs



8. Encouraging Innovation

Chapter Summary

This chapter sets out the arrangements that will apply to encourage the GDNs to innovate to drive improved outcomes for consumers in RIIO-GD1 and beyond.

- 8.1. Many elements of the RIIO framework are intended to encourage innovation. These include the strong emphasis on delivering outputs and lengthening the price control period to provide companies with more certainty of the rewards for successful innovation. The framework provides a strong incentive to innovate and for companies to adopt a range of innovative and conventional approaches across all aspects of their business
- 8.2. In addition, the framework includes a time-limited innovation stimulus package to fund innovation where the commercial benefits may be uncertain and therefore stakeholders are unwilling to fund research and development projects speculatively. The innovation stimulus consists of the following:
 - **Network Innovation Allowance (NIA)** - The NIA is a set allowance that each of the RIIO network licensees will receive to fund small-scale innovative projects as part of their price control settlement.
 - **Network Innovation Competition (NIC)** - The NIC is an annual competition for funding larger, more complex projects which have the potential to deliver low carbon and/or wider environmental benefits to consumers. The NIC will comprise of two competitions - one for gas and one for electricity.
 - **Innovation Roll-out Mechanism (IRM)** - A revenue adjustment mechanism that enables companies to apply for additional funding within the price control period for the rollout of initiatives with demonstrable and cost effective low-carbon and/or environmental benefits.

Summary of Initial Proposals

NIA

- 8.3. Our March 2011 Strategy Document required each network operator to include an innovation strategy as part of their business plan, explaining the company's approach to innovation, its motivation and objectives. We set out that the level of funding available through the NIA would be linked to the innovation strategy. We set out in the Strategy Document that the NIA would be between 0.5-1 per cent of revenues. We also set out that companies wishing to spend more than 0.5 per cent of revenue should request that higher amount in their innovation strategy (up to a maximum of one per cent of revenue). In making such a request the companies were required to

provide justification for the additional funds. We set out that such requests would be judged by the quality and content of the innovation strategy as well as the company's justification.

- 8.4. In their second business plans, all GDNs requested the maximum allowance of one per cent. However, at IP we stated we did not consider that WWU or SGN's strategies merited funding beyond 0.5 per cent. For NGGD and NGN, we considered their strategies were better justified and we proposed funding levels of 0.6 per cent.

NIC

- 8.5. In IP we set out an expected delay to the commencement of the Gas NIC as a result of an ambiguity in the Gas Act which prevents the use of our desired mechanism for raising and transferring funds. In light of this delay, we proposed two options: delay the competition until we get the required amendment to the Gas Act, or implement an alternative funding mechanism where funding is raised from the winning companies' own customers only (rather than socialised across all customers).

Summary of respondents' views

- 8.6. Four respondents made general comments about the whole innovation stimulus package. Two respondents supported the innovation stimulus proposals and one respondent felt the package was too limited. One respondent (a DNO) stated it would be helpful to understand the criteria adopted to assess the company's innovation strategies.

NIA

- 8.7. Five respondents provided views on the proposed level of the NIA for each of the GDNs. One respondent noted Ofgem had rightly identified the two stronger innovation strategies, but was disappointed by the level of funding proposed for these GDNs and proposed these companies should be rewarded beyond 0.6 per cent.
- 8.8. All GDNs were disappointed with the proposed levels of funding. NGN felt that the quality distinction between its strategy and the other GDNs strategies warranted more than 0.1 per cent difference in NIA. Both WWU and SGN argued that there should be a blanket one per cent NIA for all GDNs to maximise innovation opportunities in RIIO-GD1. NGGD asked for further rationale on their proposed NIA.

NIC

- 8.9. In considering the options for dealing with the potential delay to the NIC we have considered views submitted to both the RIIO-GD1 and RIIO-T1 IP consultations. This is because the issue will impact on all gas transporters.
- 8.10. Seven respondents provided views on their preferred option for running the gas NIC. Three supported option 1: run the NIC and raise the required funds from the winning licensee's customers (ie this could be from either NGGT's or GDN's customers). The other four supported option 2: no NIC in 2013, and no replacement funding in that year. The lost funds would be rolled-over into subsequent years such that the overall level of funding in RIIO-GD1 is unchanged.
- 8.11. Those who supported option 2 did so because they felt that option 1 was against the philosophy of the competition or they felt that the rollover of the funds would produce improved innovation projects, through longer development time and improved choice by the networks.

Our decision

- 8.12. We continue to believe the RIIO framework provides strong incentives for innovation as part of the company's normal course of business and that the overall innovation stimulus package of the NIC, NIA and IRM provides a strong additional incentive for riskier innovation that GDNs otherwise would not do as part of business as usual.
- 8.13. We note that the Treasury introduced tax relief for innovation spending in 2008. The innovation stimulus provides funding for companies to trial innovative techniques and approaches, and companies can pass through up to 90 percent of these costs to consumers (subject to the NIC and NIA governance arrangements). We are mindful of companies receiving excessive gains through this tax relief, given this level of consumer funding. Therefore we intend to monitor its use during RIIO-T1 and may consider consulting on further action in the future.

NIA

- 8.14. At IP we assessed the quality and content of each of the GDNs' innovation strategies against the minimum requirements set out in the March Strategy Documents. To justify funding beyond the default of 0.5 per cent we expected GDNs to provide innovation strategies that went beyond these minimum requirements; clearly justifying why funding beyond the default of 0.5 per cent was warranted, demonstrating how additional funding would provide value for money for consumers and demonstrating how learning would be effectively disseminated into the GDNs' normal business activities during RIIO-GD1 and beyond.

- 8.15. Following the receipt of IP responses, we have further reviewed the GDNs' innovation strategies and any additional information provided at IP. We do not consider that there is justification for funding either NGN or NGGD at their preferred level (one per cent), although we do believe that there is justification for providing some further allowance for both licensees. We consider that they have produced innovation strategies that have gone beyond the minimum requirements in some areas and are stronger than SGN and WWU and this was recognised by respondents to IP. Respondents across both RIIO-T1 and RIIO-GD1 have also stressed the need to provide adequate reward to those companies who have developed relatively stronger innovation strategies and we believe there is merit in this view – although that should be tempered with the absolute performance of the companies against our assessment criteria.
- 8.16. Therefore we will increase the funding level for NGN and NGGD to 0.7 per cent. For WWU and SGN, we will not change their allowances from IP and they will receive a NIA of 0.5 per cent.
- 8.17. Further information is provided in Appendix 2

NIC

- 8.18. Since IP, we have been actively working with DECC to resolve the expected delay to the Gas NIC. On 18 October the Secretary of State for Energy and Climate Change announced that the Government would propose the necessary amendment to the Gas Act as part of the Department for Communities and Local Government's (CLG's) Growth and Infrastructure Bill.²³
- 8.19. If the clause is included in the legislation and the Bill progresses to schedule, we believe that it would be possible for us to introduce licence conditions in a manner that would allow the Gas NIC to commence in 2013 under our desired funding mechanism (ie funding would be recovered from all customers and transferred to the winning licensee(s)). We have therefore decided to include the NIC licence conditions in the December statutory consultation on this basis. If subsequently there is an unexpected material delay to the legislative timetable that prevents the amendment being delivered in time, we would not award funding in 2013. In this instance, licensees would still be able to recover their efficiently incurred bid preparation costs through the NIA and the unawarded funds would be rolled-over into subsequent years such that the overall level of funding in RIIO-GD1 is unchanged. This is equivalent to our preferred option at IP that was supported by a majority of the respondents.
- 8.20. We have developed the governance documents and the licence conditions in conjunction with the Licence and Innovation Working Groups and draft

²³ See DECC press release: 'Ed Davey tells CBI: Coalition will unlock energy investment'

versions of these documents have been publically consulted on throughout October and November 2012.²⁴ In late December 2012, both will undergo the requisite 28 day statutory consultation, to enable them to take effect by 1 April 2013, at the start of RIIO-T1 and GD1.

IRM

- 8.21. The IRM is a revenue adjustment mechanism that enables companies to apply for additional funding within the price control period for the rollout of initiatives with demonstrable and cost effective low carbon or environmental benefits. There will be two reopener windows and the mechanism will be subject to the materiality threshold. The IRM licence condition sets out the conditions for awarding and determining revenues through the IRM. This condition was consulted on as part of the first and second informal licence consultations.²⁵

²⁴ Two versions of a NIC licence condition have been consulted on: one where funds are recovered from all customers and one where funding is only recovered from the winning licensees own customers.

²⁵ See [here](#) for further details.

Appendices

Index

| Appendix | Name of Appendix | Page Number |
|----------|---|-------------|
| 1 | Summary of outputs, secondary deliverables and monitoring/enforcement | 60 |
| 2 | Network Innovation Allowance | 64 |
| 3 | End of period review of output measures and capacity output utilisation | 67 |
| 4 | Examples of application of NOMs end of period review | 76 |
| 5 | Safety outputs | 80 |
| 6 | Capacity outputs | 83 |
| 7 | Shrinkage and Leakage outputs | 85 |
| 8 | NTS Exit Capacity Costs | 86 |

Appendix 1 - Summary of outputs, secondary deliverables, and monitoring/enforcement

1.1. Table A1.1 sets out the proposed principal output definitions, as well as secondary deliverables. It also sets out how we intend to monitor GDNs' performance, and how we enforce performance (eg through statutory, licence conditions) or reward/penalise GDNs for their performance.

Table A1.1 Principal outputs and secondary deliverables

| Output area | Principal output definition | Principal secondary deliverable | Reporting requirements | Incentive mechanism/ enforcement |
|------------------------------|--|--|---|---|
| Environment (broad measure) | <ul style="list-style-type: none"> - The total capacity (MW) of biomethane enquiries and applications currently in progress but not yet connected - Introduction of (voluntary) connection standards and provision of information for biomethane connections | n/a | RIG | <ul style="list-style-type: none"> - Publish comparative performance, ie reputational incentive. - Discretionary reward scheme (DRS) for companies that deliver environmental outputs not funded at price review. |
| Environment (narrow measure) | Gas transport losses. | n/a | RIG | <ul style="list-style-type: none"> - The shrinkage/loss levels set out in Environmental Emissions Incentive (EEI) and shrinkage draft licence conditions. - Relevant licence conditions will also set out basis for reward/penalty within period. - FP/licence condition sets out reward/penalty at end of period. |
| Customer service | Broad measure of customer service, comprising customer satisfaction survey, complaints metric, and stakeholder engagement | n/a | <ul style="list-style-type: none"> -Customer satisfaction survey -RIG | <ul style="list-style-type: none"> - Target performance and maximum reward/penalty for customer survey and complaints metric set out in licence condition. - Stakeholder engagement assessed through panel. |
| Social obligations | Number of fuel poor network connections. | | | End of RIIO-GD1 review of output performance (or at time of fuel poor network extensions scheme review). |
| | Carbon Monoxide (CO) awareness | | - CO awareness survey | <ul style="list-style-type: none"> - Publish comparative performance. - Reputational incentive. - Discretionary reward scheme (DRS) to share best practice in raising CO awareness |
| | Other social issues | | | <ul style="list-style-type: none"> - DRS for companies that deliver environmental or social outputs not funded at price review. - Stakeholder engagement incentive under the broad measure of customer |

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

| Output area | Principal output definition | Principal secondary deliverable | Reporting requirements | Incentive mechanism/ enforcement |
|---|--|--|-------------------------------|--|
| | | | | service to reward companies that work effectively and collaboratively with other agencies to address social issues. |
| Connections | <ul style="list-style-type: none"> - Guaranteed standards of performance. - Introduce voluntary connection standards of service for distributed gas entry customers during RIIO-GD1. | | | Payments under guaranteed standards of performance. |
| Safety (mains replacement) | Safety output risk (based on MPRS) | <ul style="list-style-type: none"> - Gas in buildings (GIB). - Number of fractures. - Length of main off-risk. - Asset health and risk metrics - All proposed values. | RIG | <ul style="list-style-type: none"> -Primary output measure, and secondary deliverables: end of period review. - Length of main off risk: Health and safety statutory obligation. |
| Safety (emergency response) | <ul style="list-style-type: none"> - 97% of uncontrolled gas escapes attended within 1 hr. - 97% of controlled gas escapes attended within 2 hrs. | | Safety case | Licence condition |
| Safety (repair) | <ul style="list-style-type: none"> - Management of repairs. - Time taken to complete repair by risk category. | | Safety case | <ul style="list-style-type: none"> -Primary output measure: end of period review - Health and safety statutory obligation |
| Safety (major accident hazard prevention) | <ul style="list-style-type: none"> -Gas Safety (Management) Regulations (1996) (GSM(R) safety case acceptance by HSE. -Control of major accident hazards (1999) (COMAH) safety report reviewed by HSE. | | Safety case | Health and safety statutory obligation |
| Reliability (loss of supply) | - Number and duration of interruptions disaggregated by cause (excluding large | <ul style="list-style-type: none"> - Asset health and risk metrics - Gasholders demolished | RIG | End of period review |

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

| Output area | Principal output definition | Principal secondary deliverable | Reporting requirements | Incentive mechanism/ enforcement |
|-----------------------------------|--------------------------------------|---|-------------------------------|---|
| | events). | | | |
| Reliability (network capacity) | Achieving 1 in 20 obligation. | Asset utilisation/capacity charts | RIG | End of period review |
| Reliability (network reliability) | Maintaining operational performance. | - No. and value of off-take meter error reports - Fault/duration measure | RIG | End of period review |

Appendix 2 – Network Innovation Allowance

1.2. This appendix set out our reasons for our decision on the Network Innovation Allowance (NIA) funding for the GDNs.

1.3. All GDNs will also be able to utilise both the NIC and IRM mechanisms as well.

1.4. The NIA Governance document²⁶ sets out the regulation, administration and governance of the NIA funding set in this document, including the eligibility requirements for NIA funded projects and the key knowledge dissemination requirements.

Initial Proposals

1.5. Our Initial Proposals for each GDN's NIA were as follows:

- WWU NIA should be set at 0.5 per cent of revenue
- SGN NIA should be set at 0.5 per cent of revenue
- NGGD NIA should be set at 0.6 per cent of revenue
- NGN NIA should be set at 0.6 per cent of revenue

Respondent's views

1.6. Five respondents provided comments on the proposed level of NIA funding for each of the GDNs. This included each of the GDNs.

1.7. Two GDNs (WWU and SGN) considered that a blanket one per cent NIA is needed for each GDN, to maximise opportunities for third parties to work with network companies and to allow the GDNs to deliver their outperformance targets. We continue to consider that the default of 0.5 per cent NIA plus the overall support provided through the whole innovation stimulus (NIC and IRM) provides a strong incentive for the GDNs to innovate over the duration of GD1. We clearly stated in our March Strategy document that funding would be available up to a maximum of one per cent and that the level of funding will be determined on the quality and content of the innovation strategy a GDN provides alongside their business plan.

²⁶ The Governance document is associated document to the NIA licence condition [GDC-9]. It will undergo statutory consultation alongside the licence condition.

1.8. One respondent noted that Ofgem had rightly identified the two stronger innovation strategies in relation to quality but felt there was a good case for enhancing the differentiation between the strategies beyond 0.1 per cent. NGN agreed with this view and felt disappointed that the quality of their strategy did not warrant greater differentiation from the others. NGGD stated that funding of 0.6 per cent was not sufficient and that they did not understand the rationale for this number. SGN noted in their response that following feedback they appreciate that their strategy was not as clearly defined as it could have been.

1.9. Following responses to IP, we still consider the overall quality of SGN and WWU's strategies are not sufficient to justify funding beyond 0.5 per cent and we have not seen sufficient evidence through the IP responses to alter this view.

1.10. We also do not consider that there is justification for funding either NGN or NGGD at their preferred level of (one per cent) although we do believe that there is justification for providing some further allowance for both these licensees. We consider that they have produced innovation strategies that are stronger than SGN and WWU and this was recognised by respondents to IP. Respondents across both T1 and GD1 have also stressed the need to provide adequate reward to those companies who have developed relatively stronger innovation strategies and we believe there is merit in this view – although that should be tempered with the absolute performance of the companies against our assessment criteria.

1.11. NGGD sought further information from Ofgem over what was missing from their innovation strategy. We have assessed the quality and content of each of the GDNs' innovation strategies against the minimum requirements set out in the March 2011 Strategy Documents. In addition to get funding beyond the default of 0.5 per cent we expected GDNs to provide innovation strategies that went beyond these minimum requirements and clearly justified why funding beyond the default of 0.5 per cent was warranted, how such funding would provide value for money for consumers and how learning from their innovation funding would be effectively be disseminated into the GDNs normal business activities.

1.12. As part of their response NGGD provided clear details of where innovation was discussed with stakeholders and this has provided clarity over which stakeholders have been consulted. Whilst we note in NGGD strategy they stated stakeholders have said that one per cent NIA is needed. There is no subsequent narrative which explains which stakeholders have said this, and why these stakeholders feel 1 is justified. We also note that NGGD have questioned the need to be more specific about potential customer benefits of chosen priority areas. We agree that it is not possible to assess the specific costs and benefits without having a specific project identified. However, we think that it is possible to set out a clear process for how these specific projects will be identified and subsequently appraised, and what assurances will be in place within their business to ensure value for money so that only projects which have the potential to deliver clear benefits will be progressed.

1.13. NGN has stated that with only an additional 0.1 per cent above they may not be able to undertake "transformation innovation" as it is riskier. As stated in IP, we consider that the base level of NIA funding provides a considerable stimulus for the

companies alongside other incentives within the RIIO framework. This should incentivise all types of innovation including incremental and transformational innovations. We do not consider that NGN has provided sufficient explanation as to why all transformational information would not be possible without funding beyond 0.5 per cent or how this approach delivers value for money to consumers. However we consider that NGN’s innovation strategy went beyond the minimum requirements in some areas for example they provided a good explanation of their governance and business processes that will be in place to support innovation.

1.14. Other comments raised by stakeholders included concerns over the appropriateness of self governance for the NIA and a request for Ofgem to mandate GDNs to work with suppliers on NIA projects. The NIA governance arrangements have been developed in conjunction with the Innovation Working Group and have been consulted on at both the policy development stages and the detailed governance drafting stage. The GDNs will be required to publish information on each project that is funded through the NIA on a specially designed portal which all stakeholders can access. Ofgem may also audit any of the NIA projects at any time. We believe these arrangements provide the right balance between a robust framework to ensure value for money for consumers whilst allowing the GDNs the freedom to register and progress NIA projects without approval from Ofgem first.

Appendix 3 – End of period review of network output measures, and capacity output utilisation

Summary of Initial Proposals

1.15. At IP, we set out our intention to undertake an ex post review of GDNs output performance in relation to asset health/risk, asset load/capacity utilisation secondary deliverables, as well as safety risk primary output at the end of RIIO-GD1.

1.16. We set out that we would expect to carry-over any under- or over-delivery of outputs at the next review, with the GDN incurring the cost (or benefit) of the under (over) delivery. We also consulted on the level of reward or penalty associated with over or under-delivering, citing 2.5 per cent in the current electricity distribution price control as providing a relevant benchmark.

Summary of respondents' views

1.17. Most respondents agreed with our proposed approach to the ex post review. NGGD considered that the assessment process was clear but requested clarification in relation to the following three points:

- NGGD assume that any financial penalty/reward would not apply to the three tier iron mains replacement where there is an absolute standard;
- potential for a double reward/penalty, eg in relation to NTS Exit Capacity and the secondary measure of asset utilisation; and,
- requirement to develop a clear framework for identifying benefits associated with the delivery of outputs.

Our decision

1.18. In response to NGGDs issues for clarification, we acknowledge that GDNs will have statutory obligations in relation to the delivery of iron mains replacement, eg in relation to meeting the HSE's iron mains risk reduction programme (IMRRP). However, we note that we still intend to undertake a review of the outputs associated with the programme which may not be captured by the IMRRP, eg delivery of improvement in safety risk. In undertaking our assessment at the end of period, we will need to ensure that we do not apply additional penalties in relation to absolute standards set by HSE.

1.19. In response to NGGD's second concern, we acknowledge that we will need to avoid doubling-up on rewards or penalties in undertaking our end of period review, ie imposing penalties where GDNs' actions are subject to potential enforcement action.

In relation to NNGDs third point, we note that we will need to develop a framework for identifying the benefits associated with output performance (in determining whether the output over-delivery was justified as part of the end of period review of asset health and capacity secondary deliverables).

1.20. More generally, we have decided to retain our approach set out in IP. .

1.21. Below, we set out in more detail our intended approach to NOMs assessment, as well as capacity utilisation drawing on the approach detailed in IP.

Approach to NOMs assessment

1.22. We will review the asset health/risk metrics (or network output measures, NOMs) performance in RIIO-GD1 as part of the RIIO-GD2 price control.

1.23. As with the other ex post reviews of outputs, our review of GDNs' performance in relation to NOMs will not consider GDNs' cost efficiency; our assessment will focus only on output performance. For example, a company that meets the output target but underspends will retain the benefit of such outperformance subject to the IQI incentive rate (there will be no ex post clawback).

1.24. In general, we propose to take the NOMs secondary deliverable target for the end of RIIO-GD1 as the opening position in determining funding levels to meet RIIO-GD2 NOMs target. Any under-delivery or over-delivery against the NOMs target during RIIO-GD1 would either require catch-up or be carried forward in order to meet its RIIO-GD2 NOMs target.²⁷

1.25. We note that as the GDNs' asset health and criticality measures are at a relatively early stage of development we propose to set the NOMs target based on a delta between asset health and criticality at the end of GD1 without any intervention and the output measures with intervention. This means that if there are any changes in the definition of the asset health and criticality measures the delta measure/target remains constant.

²⁷ For example: *Carry-over*: GDN over-delivers primary output by X units in RIIO-GD1. We assess over-delivery in customer interest. We measure required output for GD2 relative to the output level we expected GDN to deliver in RIIO-GD1. Assume GD2 output target relative to GD1 expectation is 2X. At GD2, we fund GDN for 2X of which GDN has already delivered X. *Catch-up*: GDN under-delivers primary output by X units in RIIO-GD1. We measure required output for GD2 relative to the output level we expected GDN to deliver in RIIO-GD1. Assume GD2 output target relative to GD1 expectation is 2X. At GD2, we fund GDN for additional 2X but GDN has to deliver 3X.

1.26. We intend a two tier approach to assess the RIIO-GD1 NOMs performance as follows:

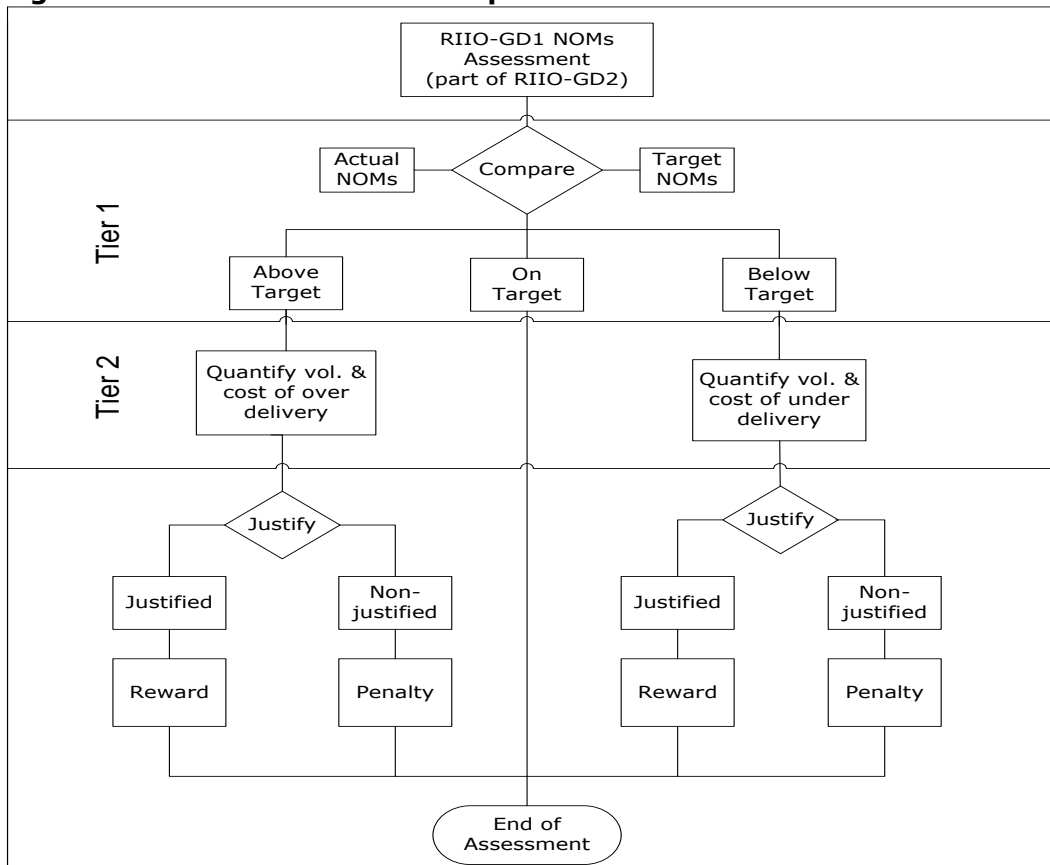
- *Tier 1:* assess the actual NOMs against target as set out in the RIIO-GD1 price control, and reach one of three possible conclusions: on target, above target, or below target;
- *Tier 2:* review the required replacement volumes that underlie the under or above target delivery. This volume will enable us to estimate the costs associated with the under or over delivery against the NOMs target. The estimate will be based on the underlying asset volume and relevant unit costs.

1.27. We would only proceed to tier 2 if the GDNs had not delivered on target. The purpose of the tier 2 assessment would be to identify the asset intervention volumes and costs required to achieve the end of RIIO-GD1 NOMs target. The identified costs associated with under or over delivery would be used to determine a financial reward or penalty, eg where the penalty/reward is set equal to X% of the identified cost. Figure A3.1 sets out the assessment process

1.28. In relation to the reward, we have decided to apply a reward of 2.5 per cent of additional costs associated with a material over-delivery if the GDNs are able to robustly justify that the over-delivery is in the consumer interest. Similarly, we will apply a penalty of 2.5 per cent of the avoided costs associated with a material under-delivery if the GDN is unable to robustly justify that the under-delivery is in the consumer interest. Where there is substantial unjustified under-delivery we may consider whether it is appropriate also to use our powers relating to enforcement of licence conditions.

1.29. As set out in chapter 1, we will use the annual reporting process (ie RIGS) to monitor GDNs' performance in relation to reliability and safety outputs (as with other output measures), and we will take action (including our powers to enforce licence conditions) to require GDNs to address any under-delivery which is not justified.

Figure A3.1 - NOMs assessment process flow chart



1.30. If a company achieves its NOMs target (or under/over-delivery is non-material) we would not apply any financial reward or penalty. In assessing whether the company has met the target, we would take into account trade-offs in NOMs between asset classes. As a result the company would be able to under deliver against NOMs targets in one asset class provided that it can demonstrate that it has over-delivered for another asset class, leading to an equivalent level of risk removal at a network level.

1.31. As part of the annual RIGs process, we will also ask GDNs to report on how they are optimising improvements in NOMs across different asset classes, ie where they are trading-off output delivery.

1.32. If a company delivers above target or below target, it would need to justify this variance in its RIIO-GD2 business plan. We would still take the RIIO-GD1 NOMs target as an opening position when setting out the allowance for the company to deliver its RIIO-GD2 NOMs target. This ensures that any under-delivery is not funded twice, and that any over-delivery receives funding provided that is justified.

1.33. As part of agreeing outputs and cost allowances for RIIO-GD2, we propose to determine the extent of justified and unjustified variances, and treat them in the following way:

Table A3.1 - Treatment of under/over delivery against NOMs

| | Justified | Unjustified |
|----------------|---|---|
| Over delivery | <ul style="list-style-type: none"> - Cost of the over delivery (net of the amount that has already been funded through the IQI incentive efficiency rate) will be funded on a NPV neutral basis at RIIO-GD2 - Reward for delivering additional output of 2.5 per cent of the additional costs associated with the over-delivery | <ul style="list-style-type: none"> - Cost of the over delivery (net of the amount that has already been funded through the sharing factor) will be funded when output is required - GDN exposed to the financing costs associated with this output plus an additional penalty |
| Under delivery | <ul style="list-style-type: none"> - Costs of catching up with the RIIO-GD1 targets will not be funded in the RIIO-GD2 allowance - GDN will be rewarded for an efficient deferral of outputs | <ul style="list-style-type: none"> - Costs of catching up with the RIIO-GD1 targets will not be funded in the RIIO-GD2 allowance - Penalty for an inefficient deferral of outputs of 2.5 per cent of the avoided costs associated with the under-delivery |

1.34. Appendix 2 sets out two case studies to demonstrate how we apply our assessment of NOMs.

True-up of NOMs (for forecast 2021 vs. actual 2021 levels)

1.35. The RIIO-GD2 price control review will be completed prior to the end of RIIO-GD1, ie we will only have access to NOMs data for 2019/2020. Therefore, we propose to use the forecast NOMs for 2020/2021 to evaluate the RIIO-GD1 NOM’s performance over RIIO-GD1, and undertake a true-up in RIIO-GD2 to take into account the difference between the forecast and actual NOMs.

Safety risk (MPRS) primary output

1.36. In Chapter 6 of this document, we set out our required improvements in safety risk. We intend that our review of GDNs’ performance against this output measure will follow the proposed review of NOMs, as set out above (and is subject to the same licence condition). Of note, as with NOMs, we propose to assess GDNs against the difference (or delta) between the opening safety risk score and the expected score at the end of RIIO-GD1. This approach acknowledges that there is dynamic growth in safety risk scores over time.

1.37. Specifically, as we propose at IP, we intend to monitor the GDNs’ risk removal by summing the risk score of GDNs’ individual pipes at the beginning of the RIIO-GD1 period. To enable this process, GDNs will be required to submit an inventory of pipes, by way of an MRPS report, by 31 March 2013. We will monitor risk reduction

by reference back to individual pipe’s risk value at the beginning of the RIIO-GD1 period.

The capacity outputs incentive mechanism for GDNs

1.38. In broad terms our proposal to assess capacity outputs follows the proposed review of NOMs.

1.39. The review is complicated by how we deal with demand risk. We propose to undertake the review as we set out at IP and as set out below.

1.40. We summarise the required capacity utilisation measures in Appendix 6.

Strategy document

1.41. In IP and our strategy document, we stated that we would assess GDNs’ performance in relation to network capacity against asset utilisation/ capacity charts (ie the secondary deliverable).²⁸ Our assessment of the secondary deliverables would inform our assessment of whether GDNs have met the primary output of delivering the 1 in 20 peak day demand scenario.

1.42. We proposed to incentivise the delivery of outputs by means of an ex-post review of outputs with *carry forward* or *catch-up* of the incremental output over-delivery or shortfall in the next period. We also proposed introducing penalties linked to financing costs to encourage companies to deliver outputs within period.

1.43. We also noted the possibility of a reopener to cover off the possibility of material changes in required expenditure in the event of differences between expected and outturn demand.

Our decision on demand risk

1.44. We do not propose to protect against demand risk *during* the RIIO-GD1 review period. This is because:

- (i) Most GDNs expect peak day flows to decline over period. As a consequence, capacity related expenditure is minimal, and the financial implication of variations in outturn demand relative to forecast is likely to be relatively immaterial (in the context of overall revenues).

²⁸ Ofgem (March 2011) RIIO-GD1: Outputs and associated incentive mechanisms, p. 60.

- (ii) We propose to allow uncertainty mechanism in relation to new large connections, which mitigates risk of the impact of specific new loads on the network. (See Finance and Uncertainty Supporting Document.)

1.45. However, we propose to take into account demand outturn relative to forecast at the end of the RIIO-GD1 period when assessing GDNs' performance against the primary output/ secondary deliverables. We set out our approach below.

Financial penalties, carry-over, and catch-up of outputs

1.46. We will incentivise the delivery of capacity outputs through an ex-post review of output performance with GDNs incurring the cost/benefit of under or over delivery to the next period. That is, we propose GDNs offset over-delivery of asset utilisation against next period targets ("carry-over" or "carry-forward") or required to make good under delivery ("catch-up"). These terms are defined as above.²⁹

1.47. As with the proposed review of NOMs and safety outputs, our ex post review will not consider GDNs' cost efficiency; our assessment will focus only on output performance. For example, a company that meets the output target but underspends will retain the benefit of such outperformance subject to the IQI incentive rate (there will be no ex post clawback).

1.48. Below, we describe how we will treat under or over-delivery, and the imposition of penalties to incentivise output performance. We also discuss how we propose to deal with demand risk.

On target delivery (ie GDN has met primary output)

1.49. Where demand outturn is less than or equal to forecast at RIIO-GD1, and where GDN delivers the required capacity we will not undertake any action at the end of period review. (Figure A3.2, middle row, left and middle cell).

1.50. Where demand outturn is greater than forecast, and the GDN delivers the required output, we will fund the GDN for the additional capacity that it has delivered during RIIO-GD1 including the financing cost.³⁰

1.51. That is, our approach to demand risk is asymmetric (compare outcomes in middle row Figure A3.2).

1.52. As with NOMs, we will only provide a reward/penalty in the event of material under or over-delivery. Our expectation would be that most GDNs would fall into the middle row, middle cell in Figure A3.2.

²⁹ See footnote 27

³⁰ That is, at RIIO-GD1, GDN will have incurred additional cost = additional incremental capacity*IQI. We will fund GDN for additional incremental capacity*(1-IQI) + financing cost.

Under-delivery (ie GDN has not met the primary output)

1.53. Where demand outturn is less than or equal to demand forecast and the GDN has not undertaken the investment in incremental capacity identified at RIIO-GD1 we will impose a penalty. Otherwise there is no consequence from failure to deliver the output. As in relation to NOMs, we have decided that the penalty will be equal to the value of the financing benefit of undertaking expenditure plus 2.5 per cent of the avoided cost.³¹ (See Figure A3.2, top row, left and middle cells).

1.54. However, where outturn demand is greater than forecast, and GDNs have undertaken at least the level incremental capacity funded at review, then we would not propose a penalty. (See Figure A10.2, top-right).

Over-delivery (ie GDN has exceeded primary output)

1.55. We will not impose a penalty where GDNs' *over deliver* within the period. The IQI efficiency incentive rate should incentivise GDNs to minimise expenditure within the period (subject to meeting the required outputs).

1.56. In terms of recognising the over-delivery against the output measure, we note that in general, where a GDN has delivered more than funded incremental capacity, and the over-delivery of incremental capacity was in the customer interest, eg facilitated delivery of efficient scale, we would allow GDNs to carry-forward the additional incremental capacity into RIIO-GD2. (Figure A3.2, bottom row).

1.57. However, if the GDN cannot provide customer interest reason for over-deliver, we would not allow carry-over of output until the output is required (in effect, the GDN would incur the financing cost associated with over-delivery, ie additional cost*IQI incentive rate).

1.58. We also need to distinguish case where GDN has delivered less than incremental capacity but over-delivered on the capacity measure (Figure A3.2, bottom left.). In this case, the GDN will benefit equal to the avoided expenditure (subject to IQI). That is, the GDN benefits from lower demand. (Figure A3.2, bottom-left).

³¹ GDNs will have the opportunity to justify why they have under delivered, eg in relation to investment lead times. Where the GDNs can justify under delivery no financial penalty will be applied.

Figure A3.2: Overview of end of period capacity output assessment

| Asset utilisation compared to target | Outturn demand compared to forecast at RIIO-GD1 | | |
|--|---|---|---|
| | Lower | Same | Higher |
| <p><i>Higher (catch-up)</i></p> <p>(That is, GDN has not delivered primary output/secondary deliverable)</p> | <p>Catch-up to output level required at RIIO-GD2 (but no additional funding)</p> <p>Recovery of financing cost benefit of allowances already received.</p> <p>Penalty = 2.5%*avoided cost</p> | <p>Catch-up to output level required at RIIO-GD2 (but no additional funding)</p> <p>Recovery of financing cost benefit of allowances already received.</p> <p>Penalty = X%*avoided cost</p> | <p>Where DN has delivered less than business plan incremental capacity</p> <p>Catch-up (=incremental capacity funded – delivered)</p> <p>Recovery of financing cost benefit of allowances already received.</p> <p>Penalty = 2.5%*avoided cost</p> <p>Where DN has delivered same as business plan incremental capacity</p> <p>No action.</p> <p>Where DN has delivered more than business plan incremental capacity</p> <p>Carry-forward (=incremental capacity delivered - funded), inc financing cost</p> |
| <p><i>Same</i></p> | <p>No action. (GDN benefits from lower outturn demand)</p> | <p>No action</p> | <p>Carry forward (=incremental capacity delivered - funded), including financing cost.</p> <p>That is, GDN does not bear demand risk.</p> |
| <p><i>Lower (carry-forward)</i></p> <p>(That is, GDN has delivered primary output/secondary deliverable)</p> | <p>Where DN has delivered less than business plan incremental capacity</p> <p>For incremental capacity installed < forecast, GDN retains benefit.</p> <p>Carry-forward = 0.</p> <p>Where DN has delivered same as business plan incremental capacity</p> <p>Carry-forward = 0.</p> <p>Where DN has delivered more than business plan incremental capacity</p> <p>Carry-forward (= increment capacity delivered – funded) into next period baselines if over-delivery justified.</p> | <p>Carry-forward of over-delivery into next period baselines if over-delivery justified, including financing cost.</p> | <p>Carry-forward of over-delivery into next period baselines if over-delivery justified, including financing cost.</p> |

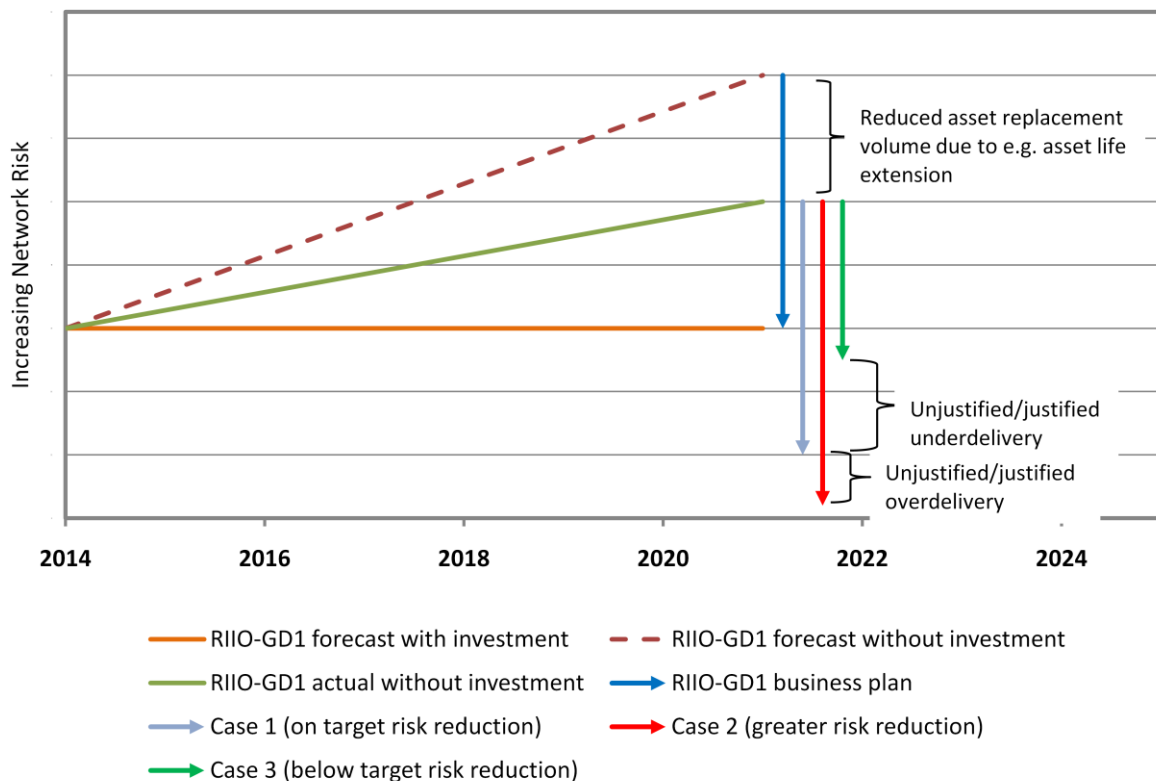
Appendix 4 - Examples of application of NOMs end of period review

1.59. In this appendix we set out two hypothetical asset degradation scenarios, and how we would apply our end of period review of NOMs.

Scenario One

1.60. Under scenario one, the actual asset degradation is slower than the forecast as expected by GDNs at the time when the NOMs target was set out. In this scenario, we identify three cases arising from different asset management strategies as shown in Figure A4.1.

Figure A4.1 – Scenario one: Asset degradation slower than forecast:



Case 1: GDN delivers same delta of risk reduction (on target)

1.61. In this instance, we assume the GDN carried out the asset replacement volume consistent with its RIIO-GD1 business plan forecast, as illustrated by the vertical light blue arrow (Case 1). Therefore the company achieved the required delta (and a

lower network risk because the slow-down of asset degradation). This is treated as the company delivering on target.

Case 2: Delivers higher delta of risk reduction (greater risk reduction)

1.62. We assume the GDN carried out the significantly higher volume of asset replacement than its RIIO-GD1 business plan forecast, as illustrated by the vertical red arrow (Case 2). The company achieved a greater delta (and a lower network risk because the higher volume of replacement outweighed the impact of the faster asset degradation on the network risk). The over-delivery is demonstrated by the higher delta.

Case 3: Below target risk reduction (under-delivery)

1.63. We assume the GDN carried out significantly less volume of asset replacement than its RIIO-GD1 business plan forecast, as illustrated by the vertical green arrow (Case 3). The company delivered a lower delta but higher level of network risk because the risk of significant reduction to asset replacement volume outweighed the benefit of the slow-down of asset degradation. The smaller delta represented the under-delivery of NOMs.

1.64. We will ask the company to provide both qualitative and quantitative evidence and justify why they under-delivered the NOMs. For the justified under-delivery expect the company to demonstrate that the under-delivery is in the best interest to consumers.

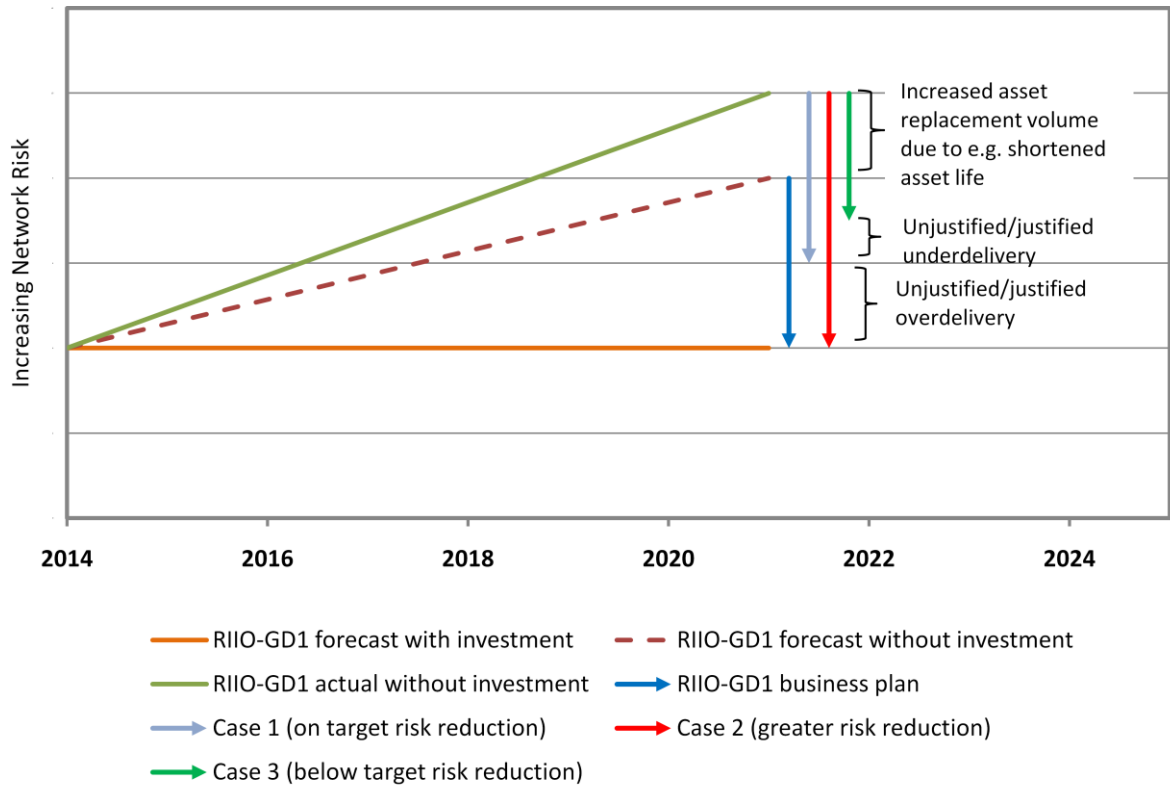
1.65. We will set allowed integrity expenditure for RIIO-GD2 price control based on the assumption that the NOMs target of RIIO-GD1 is the opening position from which the company will deliver the NOMs target of RIIO-GD2. In this case, the company will need to catch up the backlog of the under-delivery during the RIIO-GD2.

1.66. Where the company can justify its under-delivery, we will allow the company to benefit from the financing cost of avoided investment in RIIO-GD1 and will not apply an additional reward. However for the unjustified under-delivery, we will not only disallow the benefit from the financing cost but also apply an additional penalty to remove the perverse incentive.

Scenario Two

1.67. Scenario two assumes the actual asset degradation is faster than the forecast as expected by GDNs at the time when the NOMs target was set out. In this scenario there may be three cases arising from different asset management strategies as shown in Figure A4.2.

Figure A4.2 – Scenario two: Asset degradation faster than forecast



Case 1: GDN delivers same delta of risk reduction (on target)

1.68. In this instance, we assume the GDN carried out the asset replacement volume consistent with its RIIO-GD1 business plan forecast, as illustrated by the vertical light blue arrow (Case 1). Therefore the company achieved the required delta (but a higher overall network risk remains because of the faster asset deterioration). This is treated as the company delivering on target.

Case 2: Delivers higher delta of risk reduction (greater risk reduction)

1.69. We assume the GDN carried out the significantly higher volume of asset replacement than its RIIO-GD1 business plan forecast, as illustrated by the vertical red arrow (Case 2). The company achieved a greater delta (and the same planned network risk level because the higher volume of replacement outweighed the impact of the faster asset degradation on the network risk). The over-delivery is demonstrated by the higher delta.

Case 3: Below target risk reduction (under-delivery)

1.70. In this instance, we assume the GDN carried out significantly less volume of asset replacement than its RIIO-GD1 business plan forecast, as illustrated by the

vertical green arrow (Case 3). The company delivered a lower delta and leaves a higher level of network because the significant reduction to asset replacement volume combined with the higher deterioration rate. The smaller delta represented the under-delivery of NOMs.

Appendix 5 – Safety Outputs

Repair risk (primary output)

1.71. As explained in Chapter 6, the repair risk primary output measure will be based on maintaining, as a minimum, the total risk as reported for 2012/13 through the RIIO-GD1 period.

1.72. We note that all GDNs forecast declining risk values over the RIIO-GD1 period. Table A5.1 below shows the repair risk values submitted in their April 2012 business plans.

Table A5.1: Submitted repair risk forecasts

| Total accumulative repair risk (x10 ⁶) | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--|-------|-------|-------|-------|-------|-------|-------|-------|
| EoE | 7.51 | 7.33 | 7.15 | 6.95 | 6.73 | 6.51 | 6.27 | 6.02 |
| Lon | 20.20 | 20.13 | 19.99 | 19.77 | 19.47 | 19.13 | 18.72 | 18.24 |
| NW | 26.68 | 26.17 | 25.59 | 24.92 | 24.18 | 23.34 | 22.41 | 21.37 |
| WM | 9.18 | 9.08 | 8.97 | 8.85 | 8.71 | 8.55 | 8.37 | 8.17 |
| NGN | 19.48 | 19.09 | 18.71 | 18.33 | 17.97 | 17.61 | 17.25 | 16.91 |
| Sc | 4.39 | 4.39 | 4.39 | 4.39 | 4.39 | 4.39 | 4.39 | 4.39 |
| So | 24.84 | 24.84 | 24.84 | 24.84 | 24.84 | 24.84 | 24.84 | 24.84 |
| WWU | 20.80 | 20.70 | 20.70 | 20.60 | 20.40 | 20.30 | 20.00 | 19.70 |

Mains Replacement secondary deliverables

1.73. We have adjusted the GDNs' proposed secondary deliverables to take account of the effect of adjustments we have made to mains abandonment workload volumes.

1.74. We have used the requested workload volumes together with corresponding proposed secondary deliverables from the GDNs' April 2012 business plans to calculate required adjustments. (We could not see the GDNs' revised October 2012 submissions as they were not accompanied by revised primary output or secondary delivery proposals.)

1.75. We have used tiers 1, 2 and 3 abandonment workload adjustments as the basis for adjusting the 'gas in building' (GIB) events values (from iron mains), but used mandatory and discretionary abandonment workload adjustments as the basis for calculating fracture and failure values. We believe these are the most appropriate drivers for calculating the revised values.



1.76. Table A5.2 below summarises the secondary deliverables associated with the risk removal primary output.

Table A5.2: Secondary deliverables

| | | EoE | Lon | NW | WM | NGN | Sc | So | WWU | |
|--|---|--|---------|---------|---------|---------|---------|---------|---------|---------|
| Length of iron mains mains off risk¹ | GDN proposed length of iron mains off risk | km | 4966 | 4764 | 4757 | 3323 | 4396 | 1824 | 5101 | 2963 |
| | Allowed length of iron mains off risk (FP) | km | 4798 | 2888 | 3491 | 2674 | 3992 | 1993 | 5491 | 2876 |
| | Population of iron mains within scope of IMRRP policy | km | 12169 | 7643 | 9083 | 7106 | 10023 | 5091 | 13757 | 7238 |
| | Proportion of at risk iron mains population removed (GDN proposed workload) | % | 40.8% | 62.3% | 52.4% | 46.8% | 43.9% | 35.8% | 37.1% | 40.9% |
| | Proportion of at risk iron mains population removed (allowed workload) | % | 39.4% | 37.8% | 38.4% | 37.6% | 39.8% | 39.1% | 39.9% | 39.7% |
| | Percentage reduction in mains "off risk" from proposed to allowed lengths | % adjustment | -3.4% | -39.4% | -26.6% | -19.5% | -9.2% | 9.2% | 7.7% | -2.9% |
| Number non-PE services replaced (domestic premises)² | GDN requested non-PE domestic service replacements | Replacement number | 270,425 | 190,352 | 261,031 | 197,097 | 291,359 | 119,060 | 411,827 | 257,745 |
| | Allowed non-PE domestic service replacements | Replacement number | 243,018 | 171,845 | 227,066 | 169,001 | 247,458 | 105,794 | 396,588 | 201,675 |
| GIB events | RIDDOR Reportable GIB events - iron mains over RIIO-GD1 period | Number of reportable events | 0 | 0 | 0 | 0 | 339 | 0 | 0 | 3.59 |
| | | % change | - | - | - | - | -7.7% | - | - | -9.2% |
| | Adjusted RIDDOR Reportable GIB events - iron mains over RIIO-GD1 period | Number of reportable events | 0 | 0 | 0 | 0 | 371 | 0 | 0 | 3.70 |
| | GIB events (any concentration level) - iron mains over RIIO-GD1 period | Number of events | 915 | 349 | 1112 | 651 | 1157 | 512 | 594 | 551 |
| | % change | -22.0% | -21.4% | -21.5% | -21.7% | -7.7% | -37.8% | -35.9% | -9.2% | |
| | Adjusted GIB events (any concentration level) - iron mains over RIIO-GD1 period | Number of events | 911 | 329 | 1069 | 633 | 1153 | 525 | 605 | 550 |
| Fracture & failure events | GDN forecast number of fractures/failures (CI/SI/DI) over RIIO-GD1 | Number of events | 13,441 | 3,993 | 12,362 | 7,421 | 21,844 | 10,386 | 13,001 | 8,513 |
| | | % reduction in number over RIIO-GD1 | -21.6% | -21.6% | -21.6% | -21.6% | -7.7% | -4.3% | -21.3% | -9.1% |
| | Ofgem adjusted number of fractures/failures (CI/SI/DI) over RIIO-GD1 resulting from workload disallowance | Number of events | 13,517 | 4,039 | 12,527 | 7,494 | 21,936 | 10,398 | 12,887 | 8,529 |
| Emergency Response | Emergency response - proportion of uncontrolled gas escapes attended to within one hour | % uncontrolled gas escapes attended to within one hour | 97.0% | 97.0% | 97.0% | 97.0% | 97.3% | 97.0% | 97.0% | 97.0% |
| | Emergency response - proportion of controlled gas escapes attended within two hours | % controlled gas escapes attended within two hours | 97.0% | 97.0% | 97.0% | 97.0% | 97.3% | 97.0% | 97.0% | 97.0% |
| | Proportion of gas escapes prevented within 12 hours | Average yearly % | 42% | 43% | 34% | 36% | 57% | 60% | 60% | 40% |

1 - Refers to iron pipes "at risk" as defined by HSE under the iron mains risk reduction programme

2 - Excludes service transfer

Appendix 6 – Capacity Outputs

1.77. This annex sets out required capacity utilisation measures. We set out our approach to undertaking the end of period review in Appendix 3.

Table A6.1 National Grid Gas capacity utilisation (No. of sites)

| capacity utilisation | No. of sites where capacity utilisation exceeds the parameter | | | | |
|---------------------------|---|---|--|---|--|
| | As at 1/4/2013 | As at 31/3/2017 <u>without</u> network intervention | As at 31/3/2017 <u>with</u> network intervention | As at 31/3/2021 <u>without</u> network intervention | As at 31/3/2021 <u>with</u> network intervention |
| </= 50% | 182 | 182 | 182 | 182 | 182 |
| >50% to </=70% | 142 | 142 | 142 | 142 | 142 |
| >70% to </=80% | 81 | 81 | 84 | 84 | 84 |
| >80% to </=100% | 164 | 164 | 162 | 162 | 162 |
| >100% | 41 | 41 | 40 | 40 | 40 |
| Total no. of sites | 610 | 610 | 610 | 610 | 610 |

Table A6.2 Northern Gas Networks capacity utilisation (No. of sites)

| capacity utilisation | No. of sites where capacity utilisation exceeds the parameter | | | | |
|---------------------------|---|---|--|---|--|
| | As at 1/4/2013 | As at 31/3/2017 <u>without</u> network intervention | As at 31/3/2017 <u>with</u> network intervention | As at 31/3/2021 <u>without</u> network intervention | As at 31/3/2021 <u>with</u> network intervention |
| </= 50% | 54 | 53 | 53 | 51 | 51 |
| >50% to </=70% | 55 | 53 | 53 | 52 | 52 |
| >70% to </=80% | 29 | 28 | 35 | 30 | 45 |
| >80% to </=100% | 40 | 43 | 43 | 44 | 44 |
| >100% | 13 | 15 | 8 | 15 | 0 |
| Total no. of sites | 191 | 192 | 192 | 192 | 192 |

Table A6.3 Scotland (Scotia) capacity utilisation (No. of sites)

| capacity utilisation | No. of sites where capacity utilisation exceeds the parameter | | | | |
|---------------------------|---|---|--|---|--|
| | As at 1/4/2013 | As at 31/3/2017 <u>without</u> network intervention | As at 31/3/2017 <u>with</u> network intervention | As at 31/3/2021 <u>without</u> network intervention | As at 31/3/2021 <u>with</u> network intervention |
| </= 50% | 96 | 89 | 89 | 91 | 91 |
| >50% to </=70% | 29 | 27 | 28 | 28 | 29 |
| >70% to </=80% | 5 | 11 | 17 | 7 | 15 |
| >80% to </=100% | 14 | 13 | 13 | 14 | 12 |
| >100% | 3 | 7 | 0 | 7 | 0 |
| Total no. of sites | 147 | 147 | 147 | 147 | 147 |

Table A6.4 Southern (Scotia) capacity utilisation (No. of sites)

| capacity utilisation | No. of sites where capacity utilisation exceeds the parameter | | | | |
|---------------------------|---|---|--|---|--|
| | As at 1/4/2013 | As at 31/3/2017 <u>without</u> network intervention | As at 31/3/2017 <u>with</u> network intervention | As at 31/3/2021 <u>without</u> network intervention | As at 31/3/2021 <u>with</u> network intervention |
| </= 50% | 88 | 89 | 111 | 90 | 103 |
| >50% to </=70% | 49 | 45 | 31 | 45 | 38 |
| >70% to </=80% | 15 | 16 | 13 | 14 | 17 |
| >80% to </=100% | 11 | 9 | 8 | 9 | 5 |
| >100% | 0 | 4 | 0 | 5 | 0 |
| Total no. of sites | 163 | 163 | 163 | 163 | 163 |

Table A6.6 Wales and West Utilities capacity utilisation (No. of sites)

| capacity utilisation | No. of sites where capacity utilisation exceeds the parameter | | | | |
|---------------------------|---|---|--|---|--|
| | As at 1/4/2013 | As at 31/3/2017 <u>without</u> network intervention | As at 31/3/2017 <u>with</u> network intervention | As at 31/3/2021 <u>without</u> network intervention | As at 31/3/2021 <u>with</u> network intervention |
| </= 50% | 167 | 167 | 167 | 167 | 167 |
| >50% to </=70% | 97 | 97 | 97 | 97 | 97 |
| >70% to </=80% | 30 | 30 | 30 | 30 | 30 |
| >80% to </=100% | 52 | 52 | 52 | 52 | 52 |
| >100% | 0 | 0 | 0 | 0 | 0 |
| Total no. of sites | 346 | 346 | 346 | 346 | 346 |

Appendix 7 – Shrinkage and Leakage Outputs

1.78. This appendix sets out the detailed annual outputs for Shrinkage and Leakage.

Table A7.1: Proposed Shrinkage volumes for RIIO-GD1

| Shrinkage Baselines (GWh) | | | | | | | | |
|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
| NG EoE | 569 | 558 | 547 | 535 | 524 | 513 | 502 | 491 |
| NG Lon | 317 | 310 | 302 | 295 | 288 | 281 | 274 | 267 |
| NG NW | 407 | 397 | 386 | 376 | 366 | 355 | 345 | 335 |
| NG WM | 335 | 328 | 321 | 315 | 308 | 301 | 295 | 288 |
| | | | | | | | | |
| NGN | 459 | 449 | 438 | 428 | 418 | 407 | 397 | 386 |
| | | | | | | | | |
| ScGN | 247 | 240 | 234 | 226 | 221 | 213 | 208 | 202 |
| SoGN | 637 | 622 | 606 | 591 | 575 | 558 | 544 | 527 |
| | | | | | | | | |
| WWU | 440 | 433 | 425 | 417 | 409 | 401 | 393 | 385 |
| | | | | | | | | |

Table A7.2: Proposed Leakage volumes for RIIO-GD1

| Leakage Baselines (GWh) | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 |
| NG EoE | 535 | 525 | 514 | 503 | 492 | 481 | 470 | 459 |
| NG Lon | 299 | 292 | 285 | 278 | 271 | 264 | 257 | 251 |
| NG NW | 385 | 375 | 365 | 355 | 344 | 334 | 324 | 314 |
| NG WM | 320 | 314 | 308 | 301 | 295 | 288 | 282 | 275 |
| | | | | | | | | |
| NGN | 434 | 424 | 413 | 403 | 392 | 382 | 371 | 361 |
| | | | | | | | | |
| ScGN | 231 | 224 | 218 | 211 | 205 | 198 | 192 | 186 |
| SoGN | 604 | 589 | 573 | 558 | 542 | 526 | 511 | 495 |
| | | | | | | | | |
| WWU | 415 | 407 | 400 | 392 | 384 | 376 | 369 | 361 |
| | | | | | | | | |

Appendix 8 – NTS Exit Capacity Costs

1.79. This annex sets out allowed NTS Exit Capacity costs, as well as allowed off-take volumes.

Table A8.1 Allowed NTS Exit Capacity (£m, 2009/10 prices) AEXt

| Licensee | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | Total |
|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| NGGD EoE | 36.1 | 36.1 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | 288.5 |
| NGGD WM | 29.7 | 29.7 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 29.6 | 237.0 |
| NGGD NW | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 43.2 | 345.6 |
| NGGD Lon | 19.7 | 19.4 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 | 19.1 | 153.7 |
| NGN | 9.7 | 9.7 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 78.2 |
| Scotia Sc | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 2.4 |
| Scotia So | 55.9 | 58.1 | 58.1 | 58.1 | 58.1 | 58.1 | 58.1 | 58.1 | 462.7 |
| WWU | 23.0 | 23.1 | 23.1 | 23.1 | 23.1 | 23.1 | 23.1 | 23.1 | 184.5 |

Table A8.2 National Grid Gas target volume of NTS Offtake (Flat) Capacity (GWh/d)

| Licensee | Offtake Node | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | Total |
|---------------------|-------------------------|---------|---------|---------|---------|---------|---------|-------------------|---------|----------------|
| NGGD EoE | Bacton | EA1 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 21.9 |
| | Brisley | EA1 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 22.6 |
| | Peterborough Tee | EA1 | 24.8 | 24.8 | 24.7 | 24.7 | 24.7 | 24.7 | 24.7 | 197.8 |
| | West Winch | EA1 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 100.5 |
| | Great Wilbraham | EA2 | 32.1 | 32.1 | 32.0 | 32.0 | 32.0 | 32.0 | 32.0 | 256.2 |
| | Roudham Heath | EA2 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 208.7 |
| | Yelverton | EA3 | 58.6 | 58.5 | 58.5 | 58.5 | 58.5 | 58.5 | 58.5 | 467.9 |
| | Matching Green | EA4 | 86.2 | 86.1 | 86.0 | 86.0 | 86.0 | 86.0 | 86.0 | 688.4 |
| | Royston | EA4 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 20.6 |
| | Whitwell | EA4 | 130.7 | 130.6 | 130.4 | 130.4 | 130.4 | 130.4 | 130.4 | 1043.5 |
| | Thornton Curtis | EM1 | 107.0 | 106.9 | 106.7 | 106.7 | 106.7 | 106.7 | 106.7 | 854.0 |
| | Walesby | EM2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 6.2 |
| | Blyborough | EM2 | 74.6 | 74.5 | 74.4 | 74.4 | 74.4 | 74.4 | 74.4 | 595.3 |
| | Gosberton | EM2 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 116.0 |
| | Kirkstead | EM2 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 7.5 |
| | Silk Willoughby | EM2 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 24.1 |
| | Sutton Bridge | EM3 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 13.3 |
| | Alrewas EM | EM3 | 116.7 | 116.6 | 116.4 | 116.4 | 116.4 | 116.4 | 116.4 | 931.5 |
| | Blaby | EM3 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 97.8 |
| | Drointon | EM3 | 85.6 | 85.5 | 85.4 | 85.4 | 85.4 | 85.4 | 85.4 | 683.6 |
| Tur Langton | EM4 | 73.9 | 73.8 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 590.1 | |
| Caldecott | EM4 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | 10.2 | 81.6 | |
| Market Harborough | EM4 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 8.8 | 70.1 | |
| | | | | | | | | Total | | 7099.0 |
| NGGD Lon | Winkfield NT | NT1 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 103.0 |
| | Horndon | NT2 | 34.4 | 34.4 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 274.6 |
| | Luxborough Lane | NT2 | 98.6 | 98.5 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 787.3 |
| | Peters Green | NT3 | 136.0 | 135.9 | 135.7 | 135.7 | 135.7 | 135.7 | 135.7 | 1086.0 |
| | Peters Green South Mill | NT3 | 185.6 | 185.5 | 185.2 | 185.2 | 185.2 | 185.2 | 185.2 | 1482.6 |
| | | | | | | | | Total | | 3733.4 |
| NGGD NW | Blackrod | NW1 | 147.8 | 147.7 | 147.6 | 147.6 | 147.6 | 147.6 | 147.6 | 1181.2 |
| | Lupton | NW1 | 20.0 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 19.9 | 159.5 |
| | Samlesbury | NW1 | 107.4 | 107.3 | 107.2 | 107.2 | 107.2 | 107.2 | 107.2 | 858.0 |
| | Audley | NW2 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 | 78.9 |
| | Eccleston | NW2 | 17.0 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 16.9 | 135.6 |
| | Holmes Chapel | NW2 | 21.2 | 21.2 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 169.2 |
| | Malpas | NW2 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 6.7 |
| | Mickle Trafford | NW2 | 23.3 | 23.3 | 23.3 | 23.3 | 23.3 | 23.3 | 23.3 | 186.3 |
| | Partington | NW2 | 62.6 | 62.5 | 62.5 | 62.5 | 62.5 | 62.5 | 62.5 | 500.2 |
| | Warburton | NW2 | 113.3 | 113.2 | 113.2 | 113.2 | 113.2 | 113.2 | 113.2 | 905.7 |
| Weston Point | NW2 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 12.9 | 103.2 | |
| | | | | | | | | Total | | 4284.7 |
| NGGD WM | Aspley | WM1 | 63.6 | 62.2 | 61.0 | 61.0 | 61.0 | 61.0 | 61.0 | 491.5 |
| | Audley WM | WM1 | 15.2 | 14.8 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 115.2 |
| | Milwich | WM1 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 177.9 |
| | Alrewas WM | WM2 | 65.3 | 62.7 | 60.8 | 60.8 | 60.8 | 60.8 | 60.8 | 492.8 |
| | Austrey | WM2 | 61.2 | 61.2 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 487.7 |
| | Shustoke | WM2 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 32.7 | 261.6 |
| | Leamington Spa | WM3 | 2.6 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 19.7 |
| | Lower Quinton | WM3 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 220.2 |
| | Ross on Wye WM | WM3 | 9.6 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 | 76.2 |
| | Rugby | WM3 | 60.7 | 60.1 | 58.2 | 58.2 | 58.2 | 58.2 | 58.2 | 469.9 |
| Stratford-upon-Avon | WM3 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 | 30.7 | |
| | | | | | | | | Total | | 2843.4 |
| | | | | | | | | NGGD Total | | 17960.5 |

Table A8.3 Northern Gas Network target volume of NTS Offtake (Flat) Capacity (GWh/d)

| Offtake Node | | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | Total |
|--------------|-----|---------|---------|---------|---------|---------|---------|---------|--------------|---------------|
| BISH | NO1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 480.8 |
| COLD | NO1 | 2.3 | 2.6 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 22.0 |
| CORG | NO1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.3 |
| COWP | NO1 | 52.1 | 52.1 | 52.1 | 52.1 | 52.1 | 52.1 | 52.1 | 52.1 | 417.0 |
| ELTN | NO1 | 59.6 | 60.2 | 60.2 | 60.2 | 60.2 | 60.2 | 60.2 | 60.2 | 481.1 |
| GUYZ | NO1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 16.2 |
| HUMB | NO1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 2.0 |
| KELD | NO2 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 14.9 |
| LBUR | NO1 | 16.6 | 18.7 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 160.7 |
| MELK | NO2 | 2.0 | 2.2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 18.8 |
| SALT | NO1 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 70.8 |
| SLWK | NO1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 60.1 | 480.8 |
| THRN | NO1 | 5.6 | 6.2 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 53.3 |
| TOWL | NO2 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 4.6 |
| WETH | NO2 | 28.4 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 28.7 | 229.0 |
| ASSL | NE1 | 4.4 | 4.4 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 36.3 |
| BALD | NE1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 9.0 |
| BURL | NE1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 144.5 |
| GANS | NE2 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 22.0 | 175.8 |
| PANL | NE1 | 139.8 | 139.8 | 139.8 | 139.8 | 139.8 | 139.8 | 139.8 | 139.8 | 1118.7 |
| PAUL | NE2 | 42.6 | 44.8 | 46.9 | 46.9 | 46.9 | 46.9 | 46.9 | 46.9 | 368.6 |
| PICK | NE2 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 71.9 |
| RAWC | NE1 | 4.6 | 4.6 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 39.5 |
| TOWT | NE1 | 69.5 | 69.5 | 69.5 | 69.5 | 69.5 | 69.5 | 69.5 | 69.5 | 556.1 |
| | | | | | | | | | Total | 4973.7 |

Table A8.4 Scotia Gas Network target volume of NTS Offtake (Flat) Capacity (GWh/d)

| Licens Offtake Node | | | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | Total |
|---------------------|----|------|---------|---------|---------|---------|---------|---------|---------|------------------|---------------|
| Scotia So | | | | | | | | | | | |
| BRAA | So | SO2 | 85.1 | 85.1 | 85.1 | 85.1 | 85.1 | 85.1 | 85.1 | 85.1 | 680.5 |
| BRAB | So | SO2 | 54.2 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 454.2 |
| HARD | So | SO1 | 105.1 | 105.1 | 105.1 | 105.1 | 105.1 | 105.1 | 105.1 | 105.1 | 840.9 |
| IPDN_N | So | SO2 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 81.1 |
| IPDN_S | So | SO2 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 100.8 |
| MAPP | So | SO2 | 42.1 | 42.1 | 42.1 | 42.1 | 42.1 | 42.1 | 42.1 | 42.1 | 336.7 |
| WNKS | So | SO2 | 69.3 | 69.3 | 69.3 | 69.3 | 69.3 | 69.3 | 69.3 | 69.3 | 554.6 |
| FARN | So | SE1 | 55.0 | 86.6 | 86.6 | 86.6 | 86.6 | 86.6 | 86.6 | 86.6 | 661.4 |
| FARN_B | So | SE1 | 117.9 | 117.9 | 117.9 | 117.9 | 117.9 | 117.9 | 117.9 | 117.9 | 943.1 |
| SHOR | So | SE1 | 47.4 | 48.3 | 48.3 | 48.3 | 48.3 | 48.3 | 48.3 | 48.3 | 385.4 |
| TATS | So | SE1 | 187.4 | 192.8 | 192.8 | 192.8 | 192.8 | 192.8 | 192.8 | 192.8 | 1536.9 |
| WINK | So | SE2 | 89.7 | 90.4 | 90.4 | 90.4 | 90.4 | 90.4 | 90.4 | 90.4 | 722.9 |
| | | | | | | | | | | Total | 7298.2 |
| Scotia Sc | | | | | | | | | | | |
| Aberdeen | Sc | SC01 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 23.5 | 188.3 |
| Armadale | Sc | SC02 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 60.2 |
| Balgray | Sc | SC01 | 14.8 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 119.5 |
| Bathgate | Sc | SC04 | 20.4 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 21.1 | 168.0 |
| Broxburn | Sc | SC02 | 56.3 | 56.3 | 56.3 | 56.3 | 56.3 | 56.3 | 56.3 | 56.3 | 450.0 |
| Careston | Sc | SC01 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 28.6 |
| Drum | Sc | SC04 | 82.5 | 82.5 | 82.5 | 82.5 | 82.5 | 82.5 | 82.5 | 82.5 | 660.2 |
| Glenmavis | Sc | SC04 | 128.3 | 128.3 | 128.3 | 128.3 | 128.3 | 128.3 | 128.3 | 128.3 | 1026.1 |
| Hume | Sc | SC02 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 13.5 |
| Kinknockie | Sc | SC01 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 24.5 |
| Langholm | Sc | SC04 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.3 |
| Lockerbie | Sc | SC04 | 6.9 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 54.2 |
| Moss-side | Sc | SC01 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 165.0 |
| Nether Ho | Sc | SC04 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 2.5 |
| Pitcaimgre | Sc | SC01 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 15.3 |
| Soutra | Sc | SC02 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 85.8 |
| St. Fergus | Sc | SC01 | 1.0 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 7.6 |
| Stranraer | Sc | SC04 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 5.9 |
| | | | | | | | | | | Total | 3076.4 |
| | | | | | | | | | | Total SGN | 5964.6 |

Table A8.5 Wales and West Utilities target volume of NTS Offtake (Flat) Capacity (GWh/d)

| Offtake Node | | | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 | 2020/21 | Total |
|----------------|-----|------|---------|---------|---------|---------|---------|---------|---------|--------------|---------------|
| Evesham | WWU | SW 1 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 45.8 |
| Ross on Wye | WWU | SW 1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 33.0 |
| Fiddington | WWU | SW 1 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 22.4 | 179.1 |
| Littleton Drew | WWU | SW 2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 18.9 |
| Cirencester | WWU | SW 2 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 7.9 | 63.5 |
| Easton Grey | WWU | SW 2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 28.2 | 225.4 |
| Seabank | WWU | SW 2 | 53.8 | 53.8 | 53.8 | 53.8 | 53.8 | 53.8 | 53.8 | 53.8 | 430.7 |
| Pucklechurch | WWU | SW 2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 185.7 |
| Ilchester | WWU | SW 2 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 31.1 | 248.7 |
| Aylesbeare | WWU | SW 3 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 19.6 | 156.9 |
| Kenn | WWU | SW 3 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 | 113.5 |
| Coffinswell | WWU | SW 3 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 39.6 |
| Choakford | WWU | SW 3 | 41.6 | 41.6 | 41.6 | 41.6 | 41.6 | 41.6 | 41.6 | 41.6 | 332.9 |
| Gilwern | WWU | WA2 | 80.0 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 640.4 |
| Dowlais | WWU | WA2 | 102.2 | 102.3 | 102.2 | 102.2 | 102.2 | 102.2 | 102.2 | 102.2 | 817.9 |
| Dyffryn | WWU | WA2 | 38.7 | 38.7 | 38.7 | 38.7 | 38.7 | 38.7 | 38.7 | 38.7 | 309.6 |
| Maelor | WWU | WA1 | 47.6 | 47.7 | 47.6 | 47.6 | 47.6 | 47.6 | 47.6 | 47.6 | 381.1 |
| | | | | | | | | | | Total | 4222.7 |