# RIIO – GD1

# Year 2 Report

# July 2015

Northern Gas Networks


Northern
Gas Networks

I am very pleased to report that two years into RIIO NGN continues to perform extremely well, meeting or exceeding many of our key targets. Over the last year we have continued to improve our customer service and achieved recognition for our approach in winning national awards outside the utility sector competing against some of the biggest and best companies in the UK. However, we do not intend to rest on our laurels and still have work to do to ensure the consistent excellence we achieve in parts of our business is reflected in all areas not just those specifically measured under RIIO. But with the commitment I witness daily from colleagues in NGN I am confident we will continue to improve the service we offer to customers.

We recognise that affordability is the key concern for our customers and this year has seen us deliver further efficiencies from modernising our workforce, moving to smaller locally based contractors and getting smarter with our approach to capital investment. The level of investment in the network has increased this year and will do so again next year as we focus on replacing the poorest performing parts of our network. During the year we have changed our approach to using and integrating new technology in our business through our new 3iG team. I am looking to forward to seeing the benefits this will bring to the business.

It is critical under RIIO that as well as driving efficiency we deliver the outputs required across safety, reliability, customer, environment, connections and social obligations. There are 51 commitments in total and I am delighted we've beaten lots of our key targets, and came close with others. Our focus on output delivery will continue to be relentless.

This annual report on RIIO contains lots of detailed technical information on our business and our forecasts for the future. It is a report submitted to our regulator Ofgem but as we did with our RIIO business plan we are making the same information available to all our stakeholders by making this report publicly available. As a network operator we recognise the importance of transparency in all our operations.

*Mark Horsley, CEO, Northern Gas Networks*

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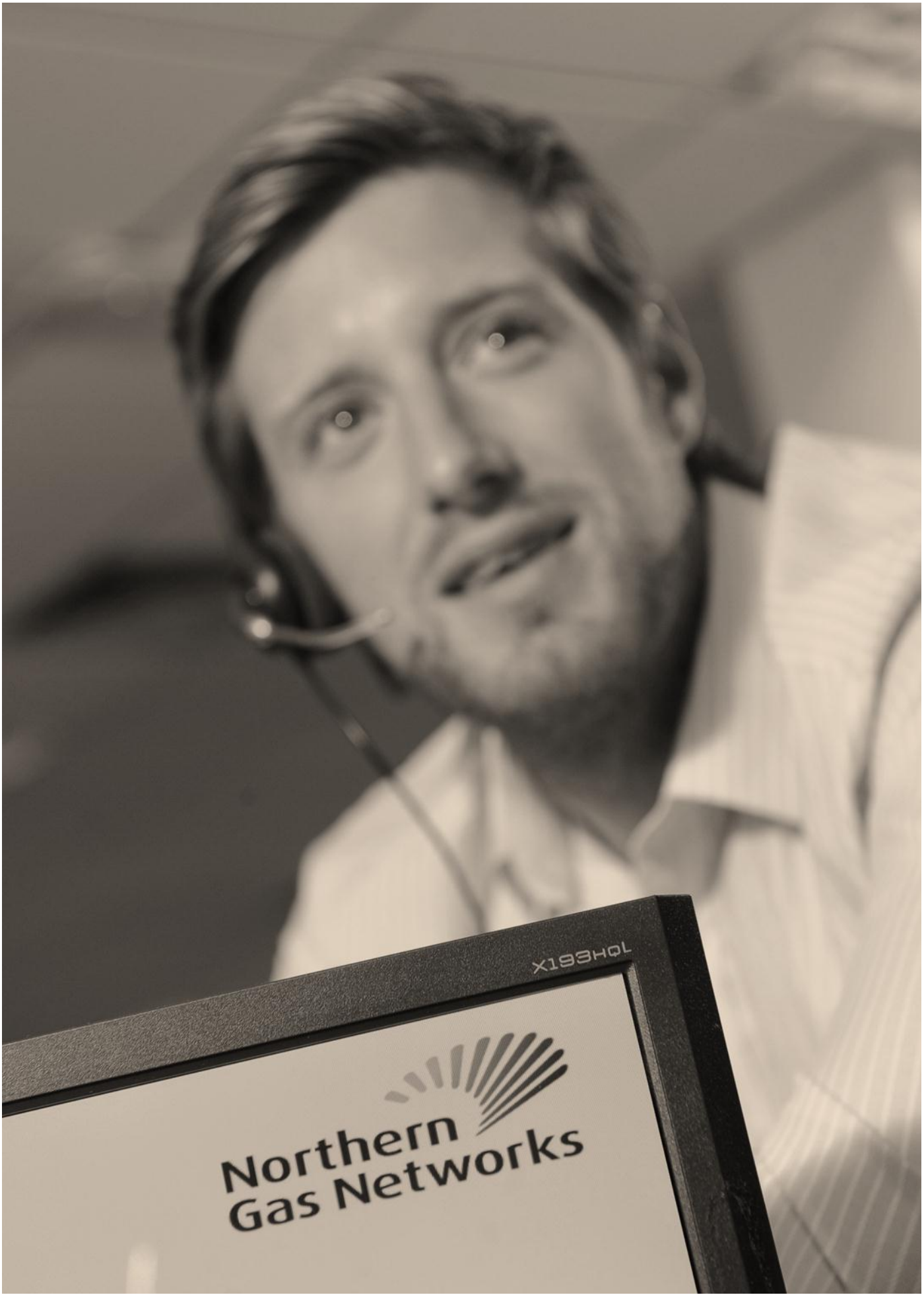
# Outputs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# Executive Summary

Gas distribution was the first sector in the energy industry to have a periodic review of its prices carried out under the new RIIO principles. This new price control applies for the eight year period from 1 April 2013 to 31 March 2021 and is referred to as RIIO-GD1. RIIO has provided the Gas Distribution Networks (GDNs) with extra challenges and opportunities to deliver for our customers. We have adapted our network operating model and vision in order to meet these challenges, and will continue to do so.

We have now successfully completed the second year of operations under RIIO and are well on the way to delivering the key outputs and deliverables we committed to in our business plan and when accepting the outcome of the price control. Northern Gas Networks (NGN) has been the most efficient gas distribution network, evidenced by the financial benchmarking of the eight GDNs since 2005/06. We are looking to maintain this position whilst operating a safe and reliable network and delivering on our customer commitments.

## Outputs

Outputs form the cornerstone of the RIIO price control framework. We have committed to delivering 51 outputs across 6 categories in RIIO. The table below summarises our performance against these outputs, split between those that must be achieved each year, and those that are to be achieved over the eight year RIIO-GD1 period.

| Primary Output | Deliverable | RAG Status | |
|---|---|---|---|
| **One Year Outputs** | | **2014/15** | |
| **Connections** | Guaranteed standards of performance | G | |
| **Environmental** | Leakage | G | |
| **Safety (emergency response)** | 97% controlled escapes | G | |
| | 97% uncontrolled escapes | G | |
| **Safety (repair)** | 12 hour escape repair requirement | G | |
| | Repair risk – management of repairs | G | |
| **Safety (major accident hazard prevention)** | GSMR safety case acceptance by HSE | G | |
| | COMAH safety report reviewed by HSE | G | |
| **Customer satisfaction** | Planned interruptions survey | G | |
| | Emergency response survey | G | |
| | Connections survey | G | |
| | Complaints handling | G | |
| **Eight Year Outputs** | | **2014/15** | **8 year** |
| **Connections** | Introduce distributed gas entry standards | G | G |
| **Social obligations** | Fuel poor connections | G | G |
| | Carbon monoxide awareness | G | G |
| | Stakeholder engagement | G | G |
| **Environmental** | Leakage | G | G |
| | Provide biomethane connections information | G | G |
| **Reliability (loss of supply)** | Duration of planned interruptions | A | G |
| | Duration of unplanned interruptions | G | G |
| | Number of planned interruptions | A | G |
| | Number of unplanned interruptions | R | R |
| **Reliability (network capacity)** | Achieving 1 in 20 obligations | G | G |
| **Reliability (network reliability)** | Maintaining operational performance | G | G |
| **Safety (mains replacement)** | Iron mains risk (based on MPRS) | G | G |
| | Sub deduct networks off risk | G | G |

**Figure A: Actual and Forecast Output performance**

Overall we have seen a strong outputs performance in 2014/15, particularly in Customer Service. We are forecasting to at least maintain performance or improve in all areas over RIIO-GD1.

We achieved an excellent performance against our **safety** outputs this year. The highlights include;

- **Mains replacement** – our strategy is to target the poorest performing mains to maximise customer benefits. As a result the outputs associated with risk removed from the network, gas in buildings and the number of fracture and corrosion failures are comfortably better than target; and
- **Emergency and repair** – we achieved a near 100% response rate for both the 1 and 2 hour emergency response standards, significantly outperforming the 97% target. We increased training and focus on the annual repair risk output which enabled us to deliver a near 28% year on year performance improvement, significantly increasing our outperformance against the target.

Our **reliability** outputs showed a mixed performance this year;

- **Planned interruptions** – the number of planned interruptions increased this year and was over target, but this was largely because we abandoned more Tier 1 mains this year, c47km ahead of target. This was a deliberate strategy to get ahead of the abandonment target to provide increased flexibility managing the workload in future; and
- **Unplanned interruptions** – the average number of minutes lost per interruption improved by nearly 23%, an excellent result which minimises the impact an interruption has on our customers. The number of unplanned interruptions is an improvement on our historical performance, although behind target. The target was set based on an assumption that the number of unplanned interruptions was directly in our control. However the causes and predictability of unplanned interruptions are diverse and random; and
- The remainder of our reliability outputs exceeded or met the targets, with two gasholders decommissioned this year, in line with our overall programme.

Overall we achieved an excellent performance on **customer service** this year;

- We improved our performance in all categories and were ranked number 2 for customer service by Ofgem – just missing out on retaining the number one position by 0.03%. We have also significantly improved our complaint handling performance; and
- We have had much recognition outside of the utilities sector for our customer service performance. Over the last twelve months we have won 9 awards for our customer performance, including the prestigious National Business Award for Best Customer Experience.

We delivered a satisfactory performance against our **environmental** outputs this year;

- The **shrinkage and environmental emissions** outputs are both ahead of target. Several factors have helped here, notably our approach to the mains replacement programme where we have targeted our leakiest pipes, as well as the introduction of remote pressure monitoring and control equipment at targeted governor stations to support our pressure management activities; and
- The **use of virgin aggregate** and **spoil to landfill** outputs have both shown significant year on year improvements, though are behind our internal targets.

Our **social obligations** outputs have seen a good performance this year. We connected 1,707 **fuel poor** households to the network this year, ahead of the annualised target. We have plans in place to drive this output forward and outperform by the end of RIIO-GD1 by c2,500 connections.

In terms of our **connections** outputs, we have delivered a very strong performance. Two of the outputs were very marginally behind target compared to four last year, however the targets for all of our outputs here were set very high, well above the licence baselines.

### Totex performance

In order to deliver these outputs we received a £256.7m Totex allowance in 2014/15. We spent £227.3m in the year, an outperformance of £29.4m. This compares to an outperformance last year of £36m. The main driver for this variance is a year on year £14m increase in our Totex expenditure.

Totex increased year on year as we have significantly increased investment expenditure in the network. We have increased our capital investment in the network as our workload plans accelerate to deliver several major projects. We also increased our replacement mains laid over and above the assumed workload in the allowance, which is a deliberate strategy to increase future workload flexibility and deliver projects with strong payback early in RIIO-GD1.

The £29.4m outperformance is shared with our customers under the Totex incentive mechanism, with customers receiving 36% of the outperformance in future years through reduced bills.

### Incentives

We have had an excellent year when measured against our various incentives;

- We achieved the maximum **customer service** incentive available of £2.0m this year, and received no penalties under the **complaints handling** incentive;
- We reduced the volume of gas leaking from our network, improving our performance against the **environmental emissions** and **shrinkage** incentives to £3.3m; and
- We reduced capacity booking at offtake sites, earning £0.7m under the **exit capacity** incentive.

### Innovation

In total we invested nearly £2.4m in innovation projects this year under the **network innovation allowance** – an increase of £1m from last year. We currently have thirty-eight projects under way, having completed twelve, including notable successes such as combining acoustic camera technology with core and vacuum equipment.

We currently have one project under way under the **network innovation competition** – our 'low carbon gas preheating' project. The project has been progressing well and we now expect to have all equipment delivered and all remaining installations completed by December 2015. The current financial forecast shows the project will be delivered slightly under budget.

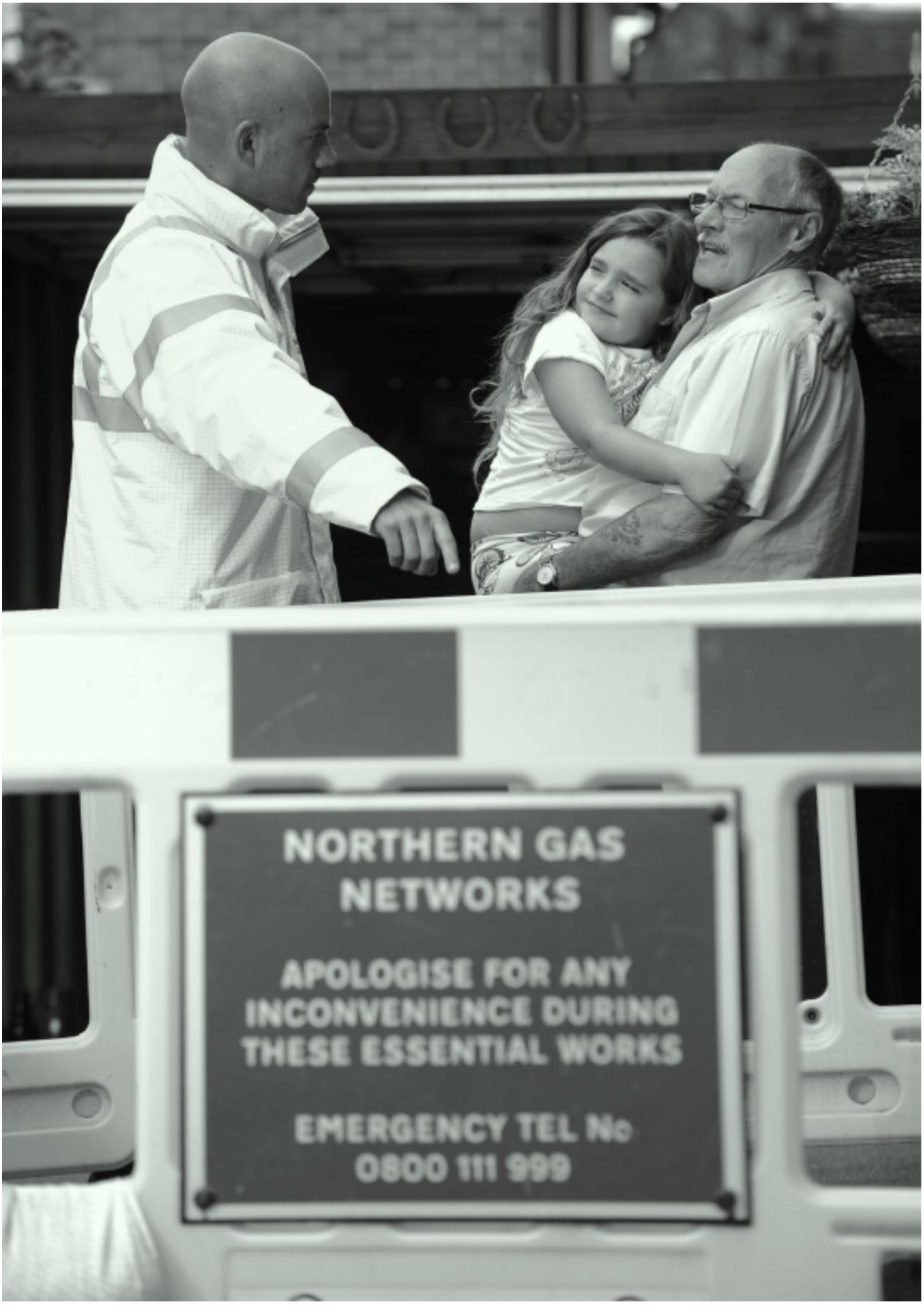
### Revenue and customer bills impact

Our forecast for total revenue over RIIO-GD1 has decreased from £3.255bn last year to £3.166bn, an average reduction of over £10m per annum. The primary driver for this has been reduced forecasts for the Retail Prices Index (RPI) which is used as part of the annual process to set our unit prices. The main impact of this is felt in the last five years of RIIO-GD1, and overall accounts for nearly £80m of the overall forecast revenue decrease.

In terms of customer bills, we are forecasting that the average annual domestic customer bill will decrease from £132 to £128 over RIIO-GD1, a real reduction of 3.2%. Underlying this forecast is a reduction in customer demand resulting in an increase in unit charges.

### Financial performance and incentives

Ofgem said when agreeing the RIIO price control settlement that they expected gas networks delivering exceptional performance could achieve double digit returns against the Return on Regulatory Equity (RORE). We have historically been the most efficient network and as detailed above have had a strong overall performance against all of our outputs and incentives this year. As a result we have achieved a RORE of 10.89% in 2014/15. This is a marginal decrease from 11.32% last year, mainly due to the movement in Totex performance detailed above.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# Introduction

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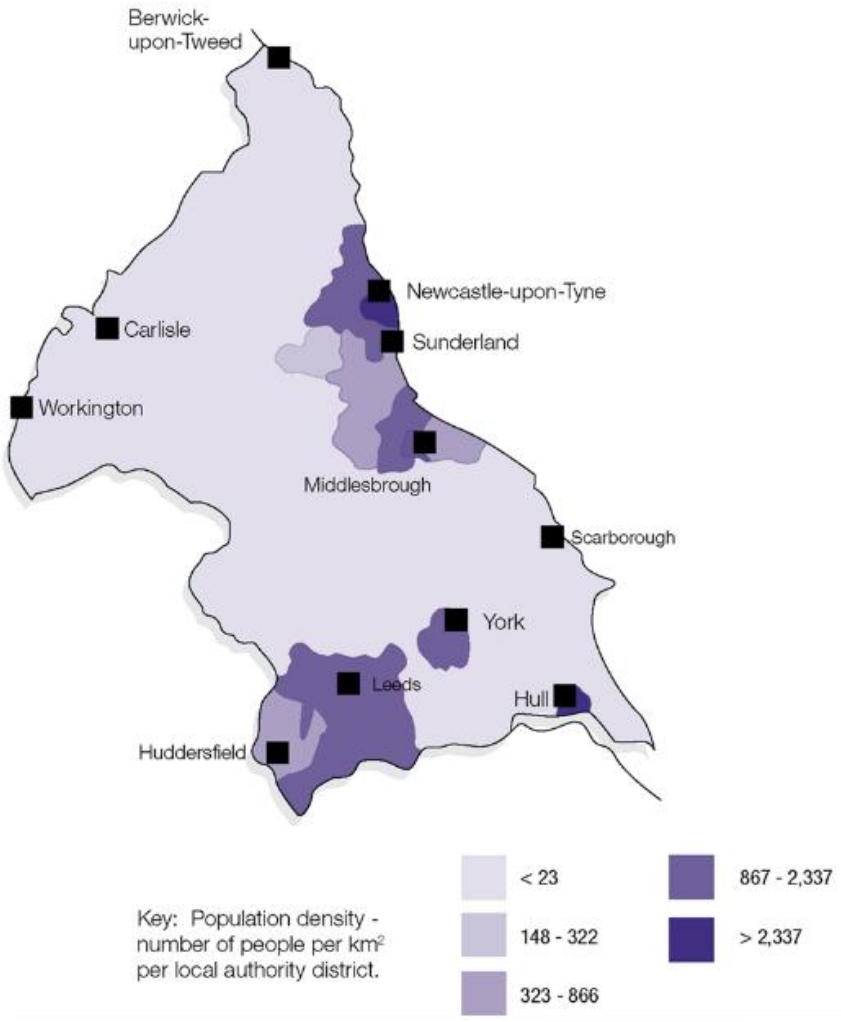
# 1 Introduction

Northern Gas Networks (NGN) is the licenced gas distributor for the North of England. We are responsible for the safe and efficient delivery of gas to homes and businesses in West, East and North Yorkshire, the North East and northern Cumbria.

Our network:

- Has 37,000km of pipeline
- Covers 24,000km$^2$
- Serves 2.7 million customers
- 50% of our customers are located in two of the largest conurbations in the UK.
- The remainder are in sparsely populated rural areas taking in four national parks.
- Our network transports 82,000 GWh of energy annually.
- We are a significant regional employer with a highly skilled workforce of more than 1,400 staff and 800 contractors.
- We invest £120m annually in the infrastructure of the region.



Gas distribution networks (GDNs) are licensed and regulated under the terms of the RIIO-GD1 price control model. This model sets allowed revenues that the GDNs can recover from consumers, in exchange for delivering a range of services to an agreed set of standards. The model also incentivises good performance whilst penalising companies for poor performance.

The RIIO-GD1 price control began on 1 April 2013 and runs to 31 March 2021. This report aims to provide stakeholders with information on our performance against the price control obligations for the second year of the price control, as well as cumulatively since the price control began. It also provides forecasts for the remaining six years of the price control.

The report is structured to reflect the RIIO-GD1 framework;

- **Revenue:** the revenue we are allowed to collect and the impact on the average gas bill.
- **Incentives:** our performance against the incentives set in the price control, and the impact on our operations.
- **Innovation:** the impact of the innovative projects under way, both in our network and in collaboration with others.
- **Outputs:** our performance against the six output areas, namely;
    - Network safety
    - Network reliability
    - Customer service
    - New connections
    - Social obligations
    - Protection of the environment

# Revenue and Customer Bills 2

# 2 Revenue and Customer Bill Impact

This section considers;

- Our overall allowed revenue and the impact on customer bills
- Revenue “allowed” compared with what we have actually collected
- A breakdown of what makes up allowed revenues; and a year on year forecast comparison
- How much income we have earned from incentives

## 2.1 Introduction

The total amount of transportation revenue we can collect each year is calculated in line with the amount set out in our licence.

There is an update process each year to adjust these revenues to reflect the latest costs and to include any incentive impacts (known as the annual iteration process which occurs each November).

This also ensures that monies are returned to customers on a timely basis, two years after the end of each regulatory year.

The key areas that drive the amount of revenue network companies can collect are:

### Base revenue

- Revenues set out in the licence as determined by the price control settlement;
- Updated cost of debt allowance driven by the iBoxx 10 year trailing average (and the associated impact on WACC);
- Adjustments relating to Totex out / underperformance – establishing the amount network companies can keep vs. amounts to be returned to customers;
- Latest pension deficit valuations and the impact on deficit funding allowances in the future;
- Any tax allowance implications resulting from either changes to legislation or tax rate changes (subject to a materiality threshold); and
- RPI – prices are set based on HM Treasury forecasts and trued up to reflect actual RPI two years after.

### Cost ‘true-ups’ on non-controllable (pass through) areas:

- Costs that are ‘non-controllable’ are always fully funded in revenue; and
- Prices are set based on a forecast of costs with any difference between actual and forecast adjusted for two years after.

### Incentives

Incentives that can increase or decrease our revenues during RIIO-GD1 are:

- Overall customer service (inclusive of customer service, complaints and stakeholder engagement);
- Shrinkage and environmental emissions volumes;
- NTS exit capacity volume bookings; and
- Discretionary rewards.

There are other incentives which are assessed at the end of RIIO-GD1 which will affect revenues in the next price control from 2021 onwards.

### Customer demand

- Whilst over the long term network companies can only collect what is 'allowed' (after calculating the above), there may be timing differences from year to year due to how revenue is physically collected (known as the 'K' correction factor).
- The vast majority of our revenue is charged out on a network capacity basis, in terms of a pence per peak day kilowatt hour basis. Prices are set in advance of a regulatory year and include a forecast of network capacity – which always results in a slight difference once actual levels are known.
- If actual demand is lower than our forecast then we will under collect revenue – and have to collect more two years after to bridge the gap; and
- If actual demand is higher than our forecast then we will over collect revenue – and have to return income two years after.

The following sections show the detail with reference to the above and also show the impact on customer bills over the eight years of RIIO-GD1.

## 2.2 Allowed Revenue and Customer Bill impact

Figure 2.1 shows our actual and forecast allowed revenues for the 8 years of RIIO-GD1. Allowed revenue for 14/15 was £412m, an increase year on year of +£9m / +2.2% largely driven by inflation.

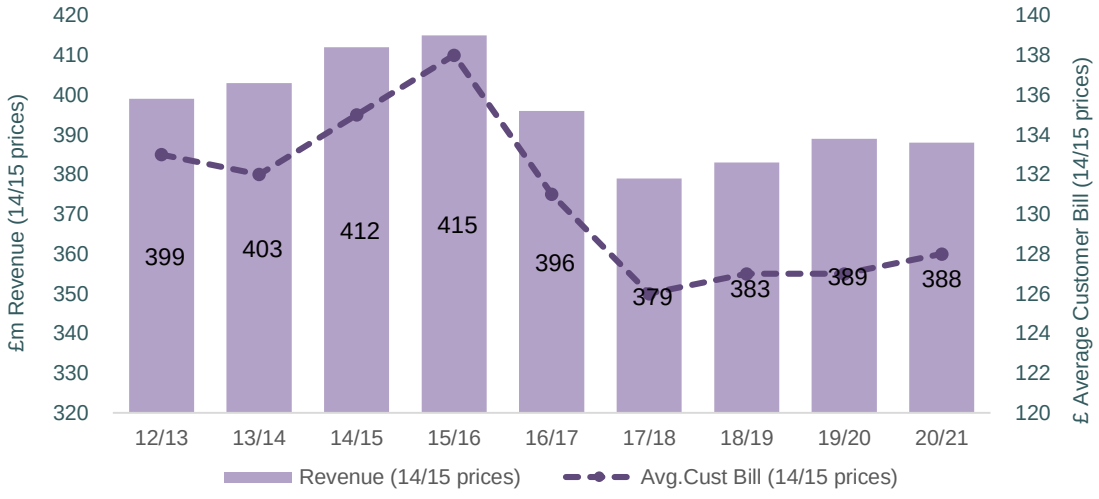



**Figure 2.1: Allowed Revenue and Customer Bills**

- Applying our forward looking Annual Quantity (AQ) profile (gas demand) to typical domestic household consumption of 15,300kWh would result in the average annual customer bill falling from £132 in 2013/14 to £128 by 2020/21. This represents a reduction in real terms of 3.2%.
- Assuming a 3% reduction in AQ's each year throughout RIIO, and average RPI inflation at 2.6%, results in an average price increase per year of c.5.0%.
- This year sees the xoserve reset of the seasonal normal inputs into the 1 in 20 peak day calculations which happens every 5 years. The actual AQ and peak day changes will not be finalised until the shipper change window closes – an early indication suggests that this could be a 6% reduction compared to the 3% reduction we have factored in below. Historically the changes to AQ's do fluctuate throughout the change window so until this is known with certainty the assumption remains at -3% for October 2015.

| (14/15 prices) | Actuals | | | Forecast | | | | | | RIIO Avg. |
|---|---|---|---|---|---|---|---|---|---|---|
| | 12/13 | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | |
| **Revenue (£m)** | **399** | **403** | **412** | **415** | **396** | **379** | **383** | **389** | **388** | **396** |
| Avg. cust bill (£) | 133 | 132 | 135 | 138 | 131 | 126 | 127 | 127 | 127 | **131** |
| SOQ % demand | (4.2%) | (1.4%) | (3.5%) | (3.0%) | (3.0%) | (3.0%) | (3.0%) | (3.0%) | (3.0%) | **(2.9%)** |
| RPI % | 3.1% | 2.9% | 2.0% | 1.4% | 2.6% | 3.0% | 3.2% | 3.0% | 3.0% | **2.6%** |
| Price change % | 10.2% | 5.1% | 4.9% | 6.1% | 1.1% | 1.6% | 7.4% | 7.7% | 6.2% | **5.0%** |

**Figure 2.2: Allowed Revenue and Customer Bills Summary**

## 2.3 Allowed Revenue vs. Collected Revenue

Table 2.3 shows the differences between "allowed" and "collected" revenue. Because prices are set in advance of the regulatory year differences can arise as some of the elements are forecast. Customer demand (Annual Quantities) is the major driver of these differences.

| 14/15 Prices | Allowed Revenue | Collected Revenue | Over / (Under Recovery) | |
|---|---|---|---|---|
| | £m | £m | £m | % |
| 13/14 | 403.1 | 406.2 | 3.1 | 0.8% |
| 14/15 | 411.9 | 409.5 | (2.4) | (0.6%) |

**Figure 2.3: Allowed Revenue vs. Collected Revenue**

## 2.4 Breakdown of Allowed Revenue

Table 2.4 below shows the breakdown of our allowed revenue forecast - showing the separate building blocks added to the base allowed revenue from the price control settlement.

Most adjustments start from 15/16 due to the 2 year lag process. As a result 14/15 revenue of £412m is mainly the base revenue figure plus known adjustments for cost of debt, NIA and incentive income from GDPCR1.

| 14/15 Prices | Actual | | Forecast | | | | | | RIIO Total | Avg. Yr |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| **BASE REVENUE** | **403.8** | **408.1** | **421.9** | **404.7** | **393.5** | **396.8** | **400.0** | **405.7** | **3234.3** | **404.3** |
| | | | | | | | | | | |
| **Income "given back"** | | | | | | | | | | |
| Cost of debt | 0.0 | (2.4) | (4.2) | (6.4) | (9.1) | (11.0) | (13.6) | (17.9) | **(64.7)** | **(8.1)** |
| Totex Incentive | 0.0 | 0.0 | (2.8) | (2.4) | (2.8) | (3.8) | (2.6) | (2.5) | **(17.0)** | **(2.1)** |
| RPI True Up | 0.0 | 0.0 | 1.4 | (5.7) | (7.3) | 0.0 | 0.0 | (0.0) | **(11.6)** | **(1.4)** |
| Cost true ups & NIA | 1.3 | 2.1 | (3.8) | (4.4) | (3.5) | (3.0) | 0.5 | (0.1) | **(10.9)** | **(1.4)** |
| Pension Deficit | 0.0 | 0.0 | 0.4 | 0.4 | 0.4 | (2.1) | (2.1) | (2.1) | **(5.3)** | **(0.7)** |
| Repex Tier 2a | 0.0 | 0.0 | (1.0) | (0.9) | (0.8) | (0.9) | (0.9) | (0.8) | **(5.3)** | **(0.7)** |
| Tax trigger | 0.0 | 0.0 | (0.4) | (0.4) | (1.9) | (2.0) | (1.7) | (3.2) | **(9.5)** | **(1.2)** |
| Shrinkage & Exit | 0.0 | 0.0 | 0.0 | (0.3) | (0.2) | (0.1) | (0.2) | (0.2) | **(1.0)** | **(0.1)** |
| **Total** | **1.3** | **(0.3)** | **(10.4)** | **(20.2)** | **(25.2)** | **(22.9)** | **(20.7)** | **(27.0)** | **(125.3)** | **(15.7)** |
| | | | | | | | | | | |
| **Incentive Income** | | | | | | | | | | |
| Environmental Emissions | 0.0 | 0.0 | 2.0 | 2.7 | 2.7 | 2.7 | 2.8 | 2.8 | 15.8 | 2.0 |
| Customer Service | 0.0 | 0.0 | 1.8 | 2.0 | 2.0 | 1.9 | 1.9 | 1.9 | 11.6 | 1.4 |
| Exit Capacity | 0.0 | 0.0 | 0.0 | 0.7 | 3.2 | 1.6 | 1.5 | 1.3 | 8.2 | 1.0 |
| Shrinkage | 0.0 | 0.0 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 3.5 | 0.4 |
| Stakeholder Engagement | 0.0 | 0.0 | 1.1 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | 4.8 | 0.6 |
| DRS 14/15 | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.1 |
| **Total RIIO Incentives** | **0.0** | **0.0** | **5.6** | **7.4** | **9.3** | **7.6** | **7.5** | **7.3** | **44.7** | **5.6** |
| DRS from GDPCR1 | 1.1 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.2 |
| Capex roller GDPCR1 | 0.0 | 3.6 | 1.3 | 1.5 | 1.7 | 1.9 | 2.2 | 2.4 | 14.7 | 1.8 |
| **Total Incentives** | **1.1** | **4.4** | **7.0** | **8.9** | **11.0** | **9.5** | **9.6** | **9.7** | **61.3** | **7.7** |
| | | | | | | | | | | |
| (Over)/Under Collection (K) | (3.1) | 0.0 | (3.1) | 2.7 | (0.2) | (0.0) | 0.0 | (0.0) | **(3.8)** | **(0.5)** |
| | | | | | | | | | | |
| **TOTAL REVENUE** | **403.1** | **412.2** | **415.4** | **396.1** | **379.1** | **383.4** | **388.9** | **388.4** | **3,166.6** | **395.8** |

**Figure 2.4: Breakdown of Allowed Revenue**

## 2.5 Allowed Revenue movement year on year

Table 2.5 shows a high level reconciliation of the key movements between our revenue forecast year on year:

| 14/15 Prices | Actual | | Forecast | | | | | | RIIO Total |
|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | |
| | | | | | | | | | |
| **2014 FORECAST** | **403.1** | **411.9** | **417.4** | **407.8** | **396.1** | **399.2** | **407.8** | **411.7** | **3,255.0** |
| **Inflation impact:** | | | | | | | | | |
| 2014 RPI forecast | 3.0% | 2.8% | 3.0% | 3.2% | 3.1% | 3.2% | 3.2% | 3.2% | |
| 2015 RPI forecast | 2.9% | 2.0% | 1.4% | 2.6% | 3.0% | 3.2% | 3.0% | 3.0% | |
| Variance % | (0.1%) | (0.8%) | (1.5%) | (0.6%) | (0.1%) | (0.0%) | (0.2%) | (0.2%) | |
| Cumulative Variance % | | (0.9%) | (2.5%) | (3.1%) | (3.2%) | (3.2%) | (3.4%) | (3.6%) | |
| **Inflation £m impact** | **0.0** | **0.0** | **(2.7)** | **(15.4)** | **(19.6)** | **(12.7)** | **(13.7)** | **(14.7)** | **(78.7)** |
| **Other Changes:** | | | | | | | | | |
| Cost of Debt | (0.0) | (0.0) | 0.2 | (0.6) | (2.5) | (3.5) | (4.6) | (5.7) | **(16.7)** |
| Tax Trigger | 0.0 | 0.0 | (0.4) | (0.4) | (1.9) | (2.0) | (1.7) | (3.2) | **(9.5)** |
| Exit Capacity Incentive | 0.0 | 0.0 | (0.0) | (0.0) | 2.5 | 1.3 | 1.2 | 1.0 | **6.0** |
| Totex Incentive | 0.0 | 0.0 | (0.1) | 0.2 | 3.5 | 1.4 | 0.3 | (0.3) | **5.0** |
| Stakeholder Engagement | 0.0 | 0.0 | 1.1 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | **4.8** |
| (K) Under/Over collection | 0.0 | 0.0 | 0.0 | 3.3 | (0.2) | (0.0) | 0.0 | (0.0) | **3.0** |
| DRS | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | **0.8** |
| Other | 0.0 | 0.3 | (0.2) | (0.1) | 0.4 | (1.1) | (1.3) | (1.2) | **(3.2)** |
| | | | | | | | | | |
| **2015 FORECAST** | **403.1** | **412.2** | **415.4** | **396.1** | **379.1** | **383.4** | **388.9** | **388.4** | **3,166.6** |

**Figure 2.5: Year on Year Revenue Movements**

- As shown in table above the biggest movement year on year is inflation – by 20/21 the cumulative difference year on year is 3.6% lower which significantly reduces revenue.
- The cost of debt forecast is also 0.42% lower year on year by 20/21 resulting in revenue reducing by £16.7m across RIIO-GD1. The detail behind the movements is shown in section 2.6.
- We have included an estimate of the tax trigger impact in the forecast this year. This reflects the latest corporation tax rates announced and the adjustment needed within revenue tax allowances over and above the dead-band. By 20/21 the corporation tax rate will be 18% compared with 21% originally included within base revenues.
- The Totex incentive differences year on year reflect higher repex costs earlier in RIIO-GD1 than previously forecast which result in less money being returned through the incentive mechanism. Changes to the timing of Capex expenditure forecasts year on year also flow into the calculation.
- During 14/15 we under collected revenue due to changes in Annual Quantities (AQ) after we set our prices. AQ's reduced by 3.5% in October 2014 (compared to our forecast of -2%) resulting in NGN under collecting revenue between October 2014 and March 2015. This will be collected 2 years later in 16/17 and reflects the £3.3m movement as shown above.
- We have now included a Stakeholder award of £1.1m for 13/14 and an indicative view of £0.6m for 14/15 (based on our score of 5.5). Future years stakeholder forecast is based on the average of these years. The recently announced 14/15 DRS award of £0.8m has also been built in with a 2 year lag in revenue.
- Other movements above reflect changes within base revenue for Repex tier 2a volumes, pension deficit true ups and changes to shrinkage allowances.

## 2.6 Reduction in revenue

The main areas driving reductions in revenue are cost of debt, totex outperformance and RPI and cost true ups. These are detailed below:

### Cost of debt

The allowance within the Final Proposals for cost of debt was set at 2.92%. This was based on the iBoxx 10 year trailing average index as at 31 October 2012 (deflated by 10 year breakeven inflation). The index gets updated annually as part of the November annual iteration process (AIP) and has since been reduced to 2.72% as at 31 October 2013 and 2.55% as at 31 October 2014. Whilst Ofgem assume the same rate in any forecast years (i.e. 2.55%) we have forecast a longer term index with the following assumptions:

- Actual data up to 8 June 2015;
- Thereafter no change to 10 year breakeven inflation and no change to average BBB and A credit spreads; and
- Underlying gilt yields increase in line with market expectations for future interest rates.

Table 2.6 below shows the actual and forecast data for RIIO-GD1:

| (14/15 prices) | Actuals | | | Forecast | | | | | RIIO Total | Avg. year |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| Final Proposals Allowance | 2.92% | 2.92% | 2.92% | 2.92% | 2.92% | 2.92% | 2.92% | 2.92% | | |
| Ofgem AIP updates | | 2.72% | 2.55% | | | | | | | |
| NGN forecast | | | | 2.38% | 2.25% | 2.11% | 1.92% | 1.61% | | |
| **Revenue Impact** | **0.0** | **(2.4)** | **(4.2)** | **(6.4)** | **(9.1)** | **(11.0)** | **(13.6)** | **(17.9)** | **(64.7)** | **(8.1)** |

**Figure 2.6: Cost of Debt Index**

Our 2014 forecast showed cost of debt reducing to 2.03% by 20/21 compared with our latest forecast above of 1.61%. The key drivers of this movement are:

- The starting point for the calculations was higher – a daily real cost of debt value of 1.38% in June 2014 compared with 1.09% in June 2015; and
- There was a flattening of the yield curve implying that interest rates will not rise as quickly as the June 2014 assumption.

## Totex Incentive Mechanism

Totex covers controllable Opex, Capex and Repex.

- 2014/15 outputs have been delivered for £29.4m (11.6%) lower than our Totex allowance of £257m. Our current forecast for RIIO-GD1 as a whole is to deliver Totex for 14.5% lower than allowances.
- When we outperform Totex we return money to customers through the IQI mechanism. Table 2.7 below shows our forecast outperformance and the amount we can keep (64%) and the amount to return to customers (36%).
- On average we will return c. £2.1m back to customers each year, albeit the revenue mechanics result in some being returned in year through fast money and the remainder over 45 years via slow money.

| (14/15 prices) | Actuals | | Forecast | | | | | | RIIO total | Avg. year |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| Totex Allowance | 248 | 257 | 260 | 257 | 243 | 243 | 243 | 243 | 1,994 | 249 |
| Actuals / RIIO f'cast | 213 | 227 | 231 | 220 | 208 | 206 | 201 | 199 | 1,705 | 213 |
| **Variance** | **35** | **30** | **29** | **37** | **35** | **37** | **42** | **44** | **289** | **36** |
| **Variance %** | **14.1%** | **11.6%** | **11.1%** | **14.5%** | **14.3%** | **15.1%** | **17.3%** | **18.2%** | **14.5%** | **14.5%** |
| | | | | | | | | | | |
| **Incentive impact (£m)** | | | | | | | | | | |
| How much NGN keeps (64%) | 22 | 19 | 19 | 24 | 22 | 23 | 27 | 28 | 185 | 23 |
| How much NGN gives back (36%) | 13 | 11 | 10 | 13 | 12 | 13 | 15 | 16 | 104 | 13 |
| | | | | | | | | | | |
| **When this hits revenue (2 years after, through fast and slow money, and with tax allowance restated)** | | | | | | | | | | |
| **Revenue adjustment** | **0.0** | **0.0** | **(2.8)** | **(2.4)** | **(2.8)** | **(3.8)** | **(2.6)** | **(2.5)** | **(17.0)** | **(2.1)** |

**Figure 2.7: Totex Incentive Mechanism**

## RPI True Up

- When prices are set for the following regulatory year a forecast of RPI is included based on the previous November's HM Treasury forecast data.
- Once actual RPI is known this is included within the allowed revenue formula and any differences "trued up" 2 years later. Table 2.8 below shows the differences and adjustment needed 2 years after:

| (14/15 prices) | Actual RPI known | | 15/16 F'cast | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | RIIO Total | Avg. yr |
| Forecast RPI used to set prices | 2.7% | 3.1% | 2.6% | | | | | | | |
| Actual RPI | 2.9% | 2.0% | 1.4% | | | | | | | |
| **Variance %** | 0.2% | (1.1%) | (1.2%) | | | | | | | |
| **£m RPI true up** | **0.0** | **0.0** | **1.4** | **(5.7)** | **(7.3)** | **0.0** | **0.0** | **(0.0)** | **(11.6)** | **(1.4)** |

**Figure 2.8: RPI True up**

## Cost True Ups

- The cost lines shown in table 2.9 are areas where network companies receive an allowance to match the cost. A forecast of these costs was included within base revenues and once actual costs are known they are trued up 2 years after.
- 90% of Network Innovation costs are funded as well. A forecast of the costs is included when prices are set and then updated to reflect actual costs once known.

| (14/15 Prices) | Actual | | Forecast | | | | | | RIIO Total | Avg. yr |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| Shrinkage | 0.0 | 0.0 | (2.7) | (5.5) | (5.7) | (5.4) | (5.4) | (5.5) | (30.2) | (3.8) |
| Exit Capacity | 0.0 | 0.0 | (4.1) | (2.1) | (3.3) | (3.0) | 0.5 | (0.1) | (12.0) | (1.5) |
| NTS Pension Deficit | 0.0 | 0.0 | (0.0) | 0.0 | 2.1 | 2.1 | 2.1 | 2.1 | 8.5 | 1.1 |
| Rates | 0.0 | 0.0 | 0.3 | 0.4 | 0.8 | 0.6 | 0.6 | 0.6 | 3.4 | 0.4 |
| Licence Fee | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.2 | 0.1 |
| **Non Controllable** | **0.1** | **(0.0)** | **(6.4)** | **(6.9)** | **(5.9)** | **(5.4)** | **(1.9)** | **(2.5)** | **(28.9)** | **(3.6)** |
| Network Innovation Allowance | 1.2 | 2.2 | 2.6 | 2.5 | 2.4 | 2.4 | 2.4 | 2.4 | 18.0 | 2.3 |
| **Total Incl. NIA** | **1.3** | **2.1** | **(3.8)** | **(4.4)** | **(3.5)** | **(3.0)** | **0.5** | **(0.1)** | **(10.9)** | **(1.4)** |

**Figure 2.9: Cost true ups**

# 2.7 Incentives

RIIO-GD1 incentives to date have seen us receiving £5.6m from 13/14 performance and £6.0m from 14/15. This upward trend is forecast to continue peaking at £8.5m in 17/18 with additional monies earned from the exit capacity incentive. We are also receiving incentive income during RIIO-GD1 that relates to GDPCR1:

- DRS monies from 11/12 and 12/13 have been collected in 13/14 and 14/15 (£2m in total)
- Capex incentive income has been spread across all years of RIIO-GD1 (£14.7m in total)
- These are detailed on the table shown in section 2.4.

The areas detailed below show the measures that support the incentive income related to customer service, shrinkage and environmental emissions and exit capacity incentives.

### Customer Service and Stakeholder Engagement

We have achieved an excellent outcome in our customer service outputs, achieving the number two ranking in customer satisfaction amongst the gas networks, significantly improving our complaint handling and performing well in the stakeholder engagement assessment.

In addition we have had much recognition outside of the utilities sector for our customer service performance. Over the last twelve months we have won 9 awards for our customer performance, including the prestigious National Business Award for Best Customer Experience.

We expect to maintain and build on our year two performance and be the best in customer service:

- Our forecast assumes we will maintain our maximum incentive position and have zero complaints penalty.
- A Stakeholder Engagement award of £1.1m has now been included for 13/14 performance and based on our score of 5.5 for 14/15 we estimate this to be worth £0.6m.

| Customer Service Scores | 13/14 | | | | 14/15 | | | |
|---|---|---|---|---|---|---|---|---|
| | Actual | Target | Variance | Inc. (£m) | Actual | Target | Variance | Inc. (£m) |
| Planned | 8.38 | 8.09 | 0.29 | 0.5 | 8.65 | 8.09 | 0.56 | 0.7 |
| Unplanned | 9.25 | 8.81 | 0.44 | 0.7 | 9.38 | 8.81 | 0.57 | 0.7 |
| Connections | 8.61 | 8.04 | 0.57 | 0.7 | 9.01 | 8.04 | 0.97 | 0.7 |
| **Total** | **8.75** | **8.31** | **0.43** | **1.8** | **9.01** | **8.31** | **0.70** | **2.0** |
| | | | | | | | | |
| **Stakeholder** | **6.75** | | | **1.1** | **5.5** | | | **0.6** |

| Complaints Scores | Weighting | 13/14 | 14/15 |
|---|---|---|---|
| D+1 | 10% | 38.1% | 19.0% |
| D+31 | 30% | 1.4% | 1.3% |
| Repeats | 50% | 1.1% | 0.7% |
| Ombudsman | 10% | 0.1% | 0.0% |
| **Complaints Metric Score** | | **4.78** | **2.66** |
| **Ofgem Target** | | **11.57** | **11.57** |
| | | | |
| **£ Penalty** | | **nil** | **nil** |

**Figure 2.10: Customer Service and Complaints scores**

## Shrinkage and Environmental Emissions Incentive

NGN is responsible for purchasing gas to replace the gas lost through shrinkage. Shrinkage comprises leakage from pipelines (c.95%), theft from the gas network (c.3%), and own use gas (c.2%). We have been set output targets to reduce the amount of shrinkage and leakage from our network over RIIO-GD1.

Table 2.11 below shows the target and actual volume levels and the incentive income due from this level of outperformance. Our forecast assumes we will maintain our GWh outperformance in the future years of RIIO-GD1.

The operational initiatives in place to support the reduction in volumes are detailed within the Environmental Outputs section.

| 14/15 prices | Actuals | | Forecast | | | | | | RIIO total | Avg. year |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| **Shrinkage GWh:** | | | | | | | | | | |
| Allowed volumes | 459 | 445 | 433 | 423 | 412 | 401 | 390 | 379 | 3,342 | 418 |
| Actual / forecast | 421 | 397 | 385 | 375 | 364 | 353 | 342 | 331 | 2,968 | 371 |
| Variance | 38 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 374 | 47 |
| Variance % | 8.4% | 10.8% | 11.1% | 11.3% | 11.6% | 12.0% | 12.3% | 12.7% | 11.2% | 11.2% |
| **Incentive (£m)** | **0.0** | **0.0** | **0.7** | **0.6** | **0.6** | **0.6** | **0.6** | **0.6** | **3.5** | **0.4** |
| **Environmental Emissions GWh:** | | | | | | | | | | |
| Allowed volumes | 434 | 420 | 408 | 398 | 386 | 376 | 364 | 354 | 3,140 | 393 |
| Actual / forecast | 399 | 375 | 363 | 353 | 341 | 331 | 319 | 309 | 2,789 | 349 |
| Variance | 35 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 351 | 44 |
| Variance % | 8.1% | 10.7% | 11.1% | 11.3% | 11.7% | 12.0% | 12.4% | 12.7% | 11.2% | 11.2% |
| **Incentive (£m)** | **0.0** | **0.0** | **2.0** | **2.7** | **2.7** | **2.7** | **2.8** | **2.8** | **15.8** | **2.0** |

**Figure 2.11: Shrinkage and Environmental Emissions Incentive**

## Exit Capacity Incentive

Within the allowed revenue licence formula exit capacity is separated into 2 areas as follows:

- Exit capacity costs – NGN has to pay for capacity rights to flow a level of gas through the 24 National Transmission System (NTS) offtake sites to meet 1 in 20 winter weather conditions. The cost for this commitment is treated as non-controllable and we receive an allowance to match the cost. (14/15 costs were £8.7m).
- Exit capacity incentive – whilst the above area is a pass through cost reducing this cost will ultimately benefit end consumers and networks are incentivised to reduce the bookings compared with the original license allowed volumes.

Table 2.12 below shows the actual and forecast volumes and the incentive result from this level of outperformance. The NTS price for the incentive is known up to 18/19 – in following years we have assumed the same rate.

| (14/15 prices) | Actuals | | | Forecast | | | | | RIIO total | Avg. year |
|---|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | | |
| Allowed volumes | 612 | 618 | 624 | 624 | 624 | 624 | 624 | 624 | 4,975 | 622 |
| Actual / forecast | 611 | 596 | 545 | 545 | 545 | 545 | 545 | 545 | 4,476 | 560 |
| Variance | 1 | 22 | 79 | 79 | 79 | 79 | 79 | 79 | 498 | 62 |
| Variance % | 0.1% | 3.6% | 12.7% | 12.7% | 12.7% | 12.7% | 12.7% | 12.7% | 10.0% | 10.0% |
| **Incentive (£m)** | **0.0** | **0.0** | **0.0** | **0.7** | **3.2** | **1.6** | **1.5** | **1.3** | **8.2** | **1.0** |

**Figure 2.12: Exit Capacity Incentive**

The above forecast includes an indicative view of our latest position from the July 2015 Gemini bookings process which will become effective from 1st October 2015. Following a detailed review of offtake capacity levels we have significantly reduced bookings through the July 2015 window – a reduction of 51 GWh / 8.5% resulting in additional incentive income across RIIO-GD1 of £6m compared with what we forecast last year. Compared with the license allowed volumes this is 12.7% lower. The incentive income fluctuates due to changes in the NTS prices each year.

In addition to the incentive income shown above this will also reduce the exit capacity cost in the future years of RIIO-GD1 by c. £7m (based on current indicative NTS prices)


Northern
Gas Networks

# Outputs

3

# 3 Outputs

## 3.1 Introduction

The adoption of an outputs based framework is a key element of the RIIO framework. By defining the outputs companies need to deliver (e.g. risk removed), instead of prescribing a set of inputs (e.g. 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 in relation to the services companies need to deliver.

This section sets out the outputs NGN is required to deliver during RIIO-GD1, our progress against these targets for 2014/15 and our forecasts for the next six years.

The outputs cover six areas;

- **Safety** – Minimising the risks associated with operating the gas distribution network for our stakeholders and society;
- **Reliability** – Improving the reliability of our network with the optimum level of expenditure;
- **Customer Service** – Improving the service we offer customers by engaging with them fully so their views direct the way we operate our business;
- **Environment** – Reducing the environmental impacts of gas distribution;
- **Social Obligations** – Helping to alleviate fuel poverty and actively addressing the concerns and risks of carbon monoxide poisoning; and
- **Connections** – Providing a high quality connections service for both entry and exit customers.

Outputs are classified as primary (or principal) outputs and secondary deliverables. In theory the secondary deliverables were designed to measure performance against the primary outputs. However, this distinction is blurred and does not hold true in all cases. It is far simpler therefore to consider both the primary outputs and the secondary deliverables as a single set of outputs that we must deliver for our customers. There are 51 in total.

## 3.2 Safety Outputs

The aim of the safety output measures is to ensure the provision of a safe network in compliance with HSE safety standards and improve asset knowledge to ensure GDNs develop well justified investment plans.

The table below shows the safety outputs which have a one year output target, and our performance against target during 2014/15.

| One Year Outputs | RIIO-GD1 Year 2 target | 14/15 | RAG |
|---|---|---|---|
| **Emergency response** | | | |
| 97% of uncontrolled gas escapes attended within 1 hr | 97% | 99.85% | G |
| 97% of controlled gas escapes attended within 2 hrs | 97% | 99.99% | G |
| **Repair** | | | |
| Annual repair risk (m) | <34.5 | 24.8 | G |
| Percentage of repairs completed within 12 hrs | 60.25% | 62.9% | G |
| **Major accident hazard prevention (MAHP)** | | | |
| Compliance with the Control of Major Accident Hazards regulations (number of breaches) | 0 | 0 | G |
| Compliance with the Gas Safety (Management) Regulations (GS(M)R) (number of breaches) | 0 | 0 | G |
| Sub-deduct networks 'off-risk' by the end of RIIO | 9 | 0 | G |

**Figure 3.1: 'One Year' safety outputs performance**

The table below shows the safety outputs which have an eight year output target. In most cases we have inferred an annual target based on the eight year output target in order to track progress.

| Eight Year Outputs | RIIO-GD1 Year 2 inferred target | 14/15 | RAG |
|---|---|---|---|
| **Mains replacement** | | | |
| Risk removed (incidents/year $x10^{-6}$) as measured by MPRS | 13,898 | 41,213 | G |
| Number of Gas in Buildings (GIB) events | 144 | 77 | G |
| Number of fractures and corrosion failures | 2,742 | 883 | G |
| Length of main taken 'off-risk'(km) (funded) | 483.6 | 530.83 | G |
| Length of main taken 'off-risk'(km) (customer driven) | 15.4 | 4.22 | A |
| Number of non-PE services replaced | 30,932 | 28,565 | A |
| Asset health and risk metrics | *Phased plan* | *On target* | G |

**Figure 3.2: 'Eight Year' safety outputs performance**

We have made an excellent start to the delivery of our safety outputs. More detail and explanation on each individual measure can be found in the following sections, together with our forecasts for the whole RIIO period.

### 3.2.1 Mains replacement

In May 2012 the HSE issued a new enforcement policy on iron mains risk reduction. Under the old policy, the HSE required NGN and the other GDNs to replace all iron mains within 30 metres of buildings within 30 years ('30/30' programme). The new policy is referred to as the 'Three-Tier Approach' and enables us to consider factors other than the safety risk in determining which pipes to prioritise for replacement.

The rules for each tier are:

- **Tier 1 Mains** (pipes with a diameter of 8 inches or less): under the new policy NGN must still achieve full decommissioning by 31st March 2032 and replace an agreed length of mains each year as under the old policy but can prioritise replacement based on a wide range of benefits, including reductions in gas losses, operating costs, and improvements in safety risk;
- **Tier 2 Mains** (pipes of greater than 8 inches and less than 18 inches in diameter): all mains exceeding a defined risk action threshold must, by 31st March 2021, be abandoned, remediated or assessed for continued safe use (Tier 2a Mains). Pipes in tier 2 scoring below the risk-action threshold may be decommissioned where this is justified in cost benefit terms (Tier 2b Mains); and
- **Tier 3 Mains** (pipes with a diameter of 18 inches or above): in general, the new policy only requires GDNs to replace mains if the replacement is justified in cost benefit terms.

In the second year of RIIO-GD1 we have continued the mains replacement strategy set out in detail in our Business Plan. Our strategy is based upon utilising the flexibility within the 'Three-Tier Approach' to maximise the benefits for customers from mains replacement. We do this by considering other factors, not just safety risk, when choosing which pipes to prioritise for replacement.

By continuing this strategy we have built upon the strong performance in 2013/14 and delivered improvements in asset condition and safety performance beyond that forecast previously. This approach has delivered significant additional value for customers and enabled us to exceed a number of the key RIIO-GD1 outputs including Risk Removed, Length of Iron Main Abandoned, and the number of Gas in Buildings and Fracture and Corrosion events.

The table below sets out our replacement performance to date along with forecasts for the RIIO-GD1 period.

| | Inferred annual target | 13/14 Actual | 14/15 Actual | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Risk removed (incidents/year*10-6) | 13,898 | 43,119 | 41,213 | 26,212 | 24,185 | 22,314 | 20,588 | 18,995 | 17,526 |
| Length of main taken off-risk (km) (funded) | 483.6 | 490.4 | 530.8 | 492.3 | 480.2 | 480.2 | 480.2 | 450.2 | 450.2 |
| Length of main taken off-risk (km) (customer driven) | 15.4 | 3.8 | 4.2 | 15.4 | 15.4 | 15.4 | 15.4 | 15.4 | 15.4 |
| Number of GIB events | 144 | 56 | 77 | 94 | 93 | 92 | 91 | 89 | 88 |
| Number of fracture and corrosion failures | 2,742 | 815 | 883 | 1,405 | 1,345 | 1,286 | 1,227 | 1,168 | 1,113 |
| Number of non-PE services replaced | 30,932 | 25,689 | 28,565 | 32,205 | 31,937 | 31,937 | 31,937 | 30,648 | 30,648 |

**Figure 3.3: Mains replacement forecasts**

We expect to deliver all our mains replacement safety outputs by the end of RIIO-GD1. The only exception may be the component of mains taken off-risk as a result of diversion work requested by customers which we do not control or initiate – this output continues to be below forecast as a result of a number of factors, in particular lower than forecast economic activity.

### Risk removed (based on MRPS)

The primary output for mains replacement is the level of risk removed from the network as a direct result of replacing the main. Every iron pipe within our network has a risk score calculated by the MRPS system measured as incidents/year x $10^{-6}$. This output is based on reducing the amount of risk over RIIO-GD1 and does not have formal year on year targets.

| | |
|---|---|
| Forecast iron mains risk at beginning of RIIO-GD1 (incidents/year x $10^{-6}$) | 276,341 |
| Risk reduction target over RIIO-GD1 | 111,191 |
| % risk reduction over RIIO-GD1 | 40% |
| 2013/14 risk reduction achieved | 43,119 (15.6%) |
| 2014/15 risk reduction achieved | 41,213 (14.9%) |

**Figure 3.4: Iron mains risk reduction RIIO target**

As the main driver for the replacement programme and primary output in this category, risk removal is one of the key criteria used in determining the selection of mains for replacement within the programme.

Our approach of targeting the pipes with the highest risk score early in RIIO-GD1 in order to maximise customer benefit has resulted in a significant risk reduction over the first two years. In 2014/15 the total risk removed was 41,213, which gives a cumulative total of 84,332 risk removed when added to the level of risk removed in 2013/14. The total RIIO-GD1 output target is to reduce risk by 111,191 over the eight year period.
The cumulative risk removed therefore represents 76 % of the total eight year target and a 31% reduction in the total risk outstanding on our network as measured at the start of 2013/14.

This represents a significant improvement in the overall safety of our network, and has been achieved early in the RIIO-GD1 period, an excellent result. We are consequently forecasting to be ahead of target by the end of RIIO-GD1. However, the risk profile of the remaining iron mains population means that the amount of risk removed in the remaining years of RIIO-GD1 will likely reduce year on year.

### Length of main taken 'off-risk'

This output measures the amount of iron main taken off-risk (abandoned) during RIIO-GD1. The RIIO-GD1 target for the length of iron main taken of risk is 3991.9km over the full eight years, an average target of 499km per annum over the period. The table below illustrates the breakdown of these output targets across the three tiers of mains.

| Type (km) | Allowed abandoned length | Inferred annual target | 13/14 abandoned length | 14/15 abandoned length |
|---|---|---|---|---|
| Tier 1 abandoned | 3584.0 | 463.4 | 455.7 | 495.0 |
| Tier 2a abandoned | 81.5 | 10.2 | 8.8 | 7.6 |
| Tier 2b abandoned | 163.5 | 20.4 | 22.3 | 22.5 |
| Tier 3 abandoned | 40.0 | 5.0 | 7.5 | 5.7 |
| **Total** | **3,991.9** | **499.0** | **494.2** | **530.8** |

**Figure 3.5: Length of iron main taken off-risk performance**

**Tier 1 Mains** (pipes with a diameter of 8 inches or less) – the annualised abandonment target for Tier 1 iron mains is 463.4km per annum. This is made up of two elements:

- **448km** – The annual workload must be sufficient to meet the specified yearly workload agreed by the HSE for completion of the programme by 2032; and
- **15.4km** – Rechargeable diversion works driven by customer activity, not NGN. The majority of the costs for the work are recharged to the third party requesting the main to be diverted.

The table below sets out NGN's performance against these two elements of Tier 1 mains.

| Type (km) | Inferred annual target | 13/14 abandonment length (km) | 14/15 abandonment length (km) |
|---|---|---|---|
| Tier 1 iron mains abandoned (funded) | 448.0 | 453.9 | 492.0 |
| Tier 1 iron mains abandoned (rechargeable) | 15.4 | 1.8 | 3.0 |

**Figure 3.6: Tier 1 iron mains allowed abandonment performance**

We abandoned 492k of Tier 1 HSE mains this year, an outperformance of 47km against the annualised target of 448km. Cumulatively in RIIO, this puts us 49.9km ahead of target. Our strategy for Tier 1 mains is to accelerate workload in the first three years of RIIO-GD1 so as to be 60km ahead of target. The additional mains selected for replacement in this period have been selected in line with our overall strategy and consequently deliver additional benefits for customers earlier in the programme. Additionally, this approach provides a level of contingency against any delays to the full programme caused by issues such as severe winter conditions.

The table also highlights that customer driven rechargeable diversion works have been significantly below forecast for the first two years of RIIO. As this work is driven solely by customer requests and funded directly by those customers, we cannot control the volume of work either within year or across the RIIO-GD1 period. Even accounting for this reduction in diversions workload, at the end of year 2, we are 23.9 km ahead of the overall Tier 1 target for the period.

**Tier 2a Mains** – Tier 2a relates to pipes of greater than 8 inches and less than 18 inches in diameter whose risk score exceed a defined risk action threshold. The risk posed by each iron main is modelled via MRPS (the Mains Replacement Prioritisation System). For the RIIO-GD1 period, the defined threshold for NGN is an MRPS score of 142.9. These pipes must be abandoned, remediated or assessed for continued safe use within the RIIO-GD1 period.

The table below sets out our performance against the output targets for Tier 2a mains.

| Type (km) | Inferred annual target | 13/14 actual abandonment length | 14/15 actual abandonment length |
|---|---|---|---|
| Tier 2a iron mains abandoned | 10.2 | 8.8 | 7.6 |

**Figure 3.7: Tier 2a iron mains allowed abandonment performance**

There is uncertainty as to the exact workload that may be generated by mains passing beyond the risk action threshold as a result of the dynamic nature of the iron pipe network and risk model enhancements. This was recognised in setting the RIIO-GD1 workload and financial allowances and a revenue driver was included to address this issue. Therefore if a GDN abandons more or less iron main than assumed then the cost allowance will be adjusted accordingly.

Tier 2a workload allowances were set at 81.5km across the whole period. This was set on the basis of the anticipated population of pipe that would be above the risk threshold during RIIO-GD1 after allowing for dynamic growth over the period. Based on the current risk scores of Tier 2 pipes, at the start of RIIO we had 37.5km of pipe exceeding the threshold, less than half that assumed in the allowances.

As a result our actual workload is below the forecast 10.2km per annum – cumulatively we have abandoned 16.4km of pipe against a cumulative target of 20.4km. This is higher than would be implied by a simple average of the length of the actual Tier 2a population. However this is in line with our overall strategy detailed above to deliver more benefits for customers earlier in the RIIO-GD1 period.

**Tier 2b and 3 Mains** –Tier 2b relates to pipes of greater than 8 inches and less than 18 inches in diameter that fall below the risk threshold. Tier 3 relates to pipes with a diameter of 18 inches or above. Iron mains in this category are non-mandatory and the new replacement policy only requires NGN to replace mains if the replacement is justified in cost benefit terms.

The table below sets out NGN's performance against the output targets for Tier 2b and 3 mains.

| Type (km) | Inferred annual target | 13/14 actual abandonment length | 14/15 actual abandonment length |
|---|---|---|---|
| Tier 2b abandoned | 20.4 | 22.3 | 22.5 |
| Tier 3 abandoned | 5.0 | 7.5 | 5.7 |
| **Total** | **25.4** | **29.8** | **28.2** |

**Figure 3.8: Tier 2b and 3 iron mains allowed abandonment 2014/15 performance**

We have continued to employ the cost benefit analysis methodology set out in our RIIO-GD1 business plan to identify and design the mains replacement projects in this category. Whilst abandonment / replacement of these pipes will reduce the risk of an incident this is not necessarily the principal driver, as replacement will allow us to deliver a range of benefits that are significant in their own right. These include:

- Reduction in risk;
- Reduction in leakage (emissions);
- Reduction in reported escapes;
- Reduction in associated repairs; and
- Positive customer and stakeholder impact.

The workload volumes delivered in both 2013/14 and 2014/15 have been ahead of the planned 25.4km in this category. Each project was selected based on the Net Present Value it delivered and our ability to deliver the project within the specified timeframe. For the remainder of RIIO-GD1 we expect to continue to deliver an annual programme broadly in line with the 25km per annum as set out in our business plan, whilst focussing on delivering the highest value projects as early as possible within the overall programme.

### Number of Gas in Building Events (GIBs)

Gas in Buildings (GIBs) is a measure of the number of gas escapes on a network pipe upstream of the Emergency Control Valve (ECV) which results in gas entering a building. Gas can enter the building in a number of ways – entering along the line of a service, having an open escape near property or an escape within the property. The output target is based on minimising the number of such events over RIIO-GD1 and does not have formal year on year targets.

| | Maximum number of events (RIIO-GD1) | Inferred annual target | 13/14 actual number of events | 14/15 actual number of events |
|---|---|---|---|---|
| GIB events (any concentration level) | 1,153 | 144 | 56 | 77 |

**Figure 3.9: GIB events performance**

The number of GIB events during the first two years of RIIO is well below the annualised target of 144, and in part, is a reflection of the targeted replacement programme. This performance also reflects the further reductions seen during the year in both public reported escapes and the amount of repair work needed.

However, across all of these measures it must be recognised that there are a range of factors that can influence the overall number of events in any year that are outside of our control. These factors include weather, ground conditions and the deterioration of assets not due for replacement. There is therefore much uncertainty around forecasting future performance.

### Number of fracture and corrosion failures

Fracture and corrosion failures on metallic gas mains are a key driver of gas escapes. The resultant release of gas can potentially lead to an incident. In a similar way to GIBs, fracture and corrosion failures can be influenced by factors beyond the replacement programme, such as material deterioration, change in temperature and ground conditions.

| | Maximum number of events (RIIO-GD1) | Inferred annual target | 13/14 actual number of events | 14/15 actual number of events |
|---|---|---|---|---|
| Number of fractures / failures (C1/S1/D1) over RIIO-GD1 | 21,936 | 2,742 | 815 | 883 |

**Figure 3.10: Fractures and corrosion failures performance**

The number of fracture and corrosion failure events during the first two years of RIIO is well below the annualised target of 2,742. This improvement can again be traced back to the improved asset health and performance of our distribution pipeline network. However, the incidence of fracture and corrosion failures in any year can be influenced by a number of factors that are outside of our control. There is therefore again much uncertainty around forecasting future performance, which we have based on trends over an eleven year period against the forecast of the remaining length of live iron pipe each year. This provides a prudent assessment over the full RIIO-GD1 period taking into account both our replacement programme and an assessment of the uncertainties driven by the exogenous factors highlighted above.

### Number of non-PE services replaced

This output relates to the number of metallic services replaced during RIIO-GD1. These volumes include all services replaced as part of our activities:

- Services associated with the Iron Mains Replacement Programme;
- Stand-alone bulk-service renewal programmes;
- Relays after escapes; and
- Other services replacement categories.

The output target is based on achieving the total replacement volumes over RIIO-GD1 and does not have formal year on year targets.

| | RIIO-GD1 8 year target | Inferred annual target | 13/14 actual number of non-PE services replaced | 14/15 actual number of non-PE services replaced |
|---|---|---|---|---|
| Number of non-PE domestic service replaced | 247,458 | 30,932 | 25,689 | 28,565 |

**Figure 3.11: Number of non-PE services replaced 2014/15 performance**

The total number of non-PE services replaced during the first two years of RIIO has averaged 27,127, below the average annual target of 30,932. We saw an increase of nearly 3,000 services replaced in 2014/15 largely as a result of the increase in Tier 1 mains replacement work carried out.

There are a number of factors behind this lower level of services replacement;

- Mains replacement activities in lower 'service density areas' – the historic average underlying the RIIO output target is one service every 12.6m of iron main. During 2013/14 this figure increased to 1 service every 13.2m of main and further to 13.9m in 2014/15.
- Lower than forecast reactive relay after escape workload – this is due to our strategy of employing 'targeted service performance led mains replacement'. Relays after escapes in 2014/15 are in the order of 3,000 jobs lower than forecast when setting the RIIO-GD1 output targets.

We recognise that the health of our service asset population is deteriorating and will continue to do so in the future. This potential increase in service failure would impact customers so we have identified a number of initiatives to address this issue;

- Bulk Service Renewal Programme – during 2015/16 we have identified a series of Bulk Service Renewal projects that will replace 2,000 services on a planned basis. These projects will target areas of poor service asset performance. We will use this programme to measure the impact on outputs and assess whether bulk service replacement provides value for money. The results will determine whether we continue the programme for the remainder of RIIO-GD1.
- The identification of Mains Replacement projects that take into account both service asset performance and service density.

With these initiatives, we believe that it is prudent to continue to forecast that services replacement during RIIO-GD1 will broadly meet the output targets whilst also improving the underlying health of the metallic services asset base, improving safety and reliability for customers.

## 3.2.2 Emergency Response

### Target – 97% of uncontrolled gas escapes attended within 1 hour

### Target – 97% of controlled gas escapes attended within 2 hours

The primary outputs for emergency response are to attend 97% of uncontrolled gas escapes within one hour, and 97% of controlled gas escapes within two hours.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| 97% of uncontrolled gas escapes attended within 1hr | 97% | 99.85% | 99.85% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% |
| 97% of controlled gas escapes attended within 2hrs | 97% | 99.97% | 99.99% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% |

**Figure 3.12: Emergency response forecasts**

In 2014/15 we have again performed significantly above the targets – achieving 99.85% and 99.99% respectively. This excellent performance was driven by the detailed day to day focus of our area managers and their teams and resourcing up our emergency response teams in the key winter period.

We now resource more of this activity internally following the recruitment of new Rapid Response Engineers to replace external contractors to support our winter resilience plans. We were also assisted by consistent mild winter conditions, with limited wet periods. Our forecast takes into account the exceptionally mild weather experienced in the last two years, and reduces for 2015/16 with the assumption of a more typical winter.

We expect to outperform the output targets in every year of RIIO-GD1.

## 3.2.3 Repair

The primary outputs for repair are to maintain or reduce annual repair risk and to gradually improve the percentage of repairs we complete within 12 hours.

| | RIIO-GD1 year 2 target | 14/15 |
|---|---|---|
| Annual repair risk | <34.5m | 24.8m |
| % repairs completed within 12hrs | 60.25% | 62.9% |

**Figure 3.13: Repair 2014/15 performance**

### Annual repair risk

Annual repair risk is the total risk score associated with all pipes which require a repair, recorded on a daily basis and totalled over a year. The risk score is based on a range of criteria and is used to prioritise repair work. Our target for RIIO-GD1 is to maintain annual repair risk at or below the level that was achieved in 2012/13.

We have significantly outperformed this output in 2014/15, an excellent performance showing a material improvement since 2013/14. The main drivers for this improvement are;

- Further improvement to the new management information we use to monitor this output, which is provided to our area managers on a daily basis;
- Refresher training provided to all repair teams to ensure that we assess risk appropriately across the network and that all teams are fully aware of the importance and focus we have on this output;
- A review of our workforce carried out in February 2014, which led to a rebalancing of eleven repair teams to our key West Yorkshire region; and
- The use of Core and Vac and Acoustic camera detection techniques which have improved the time to locate difficult to find repairs.

We were also assisted by consistent mild winter conditions, with limited wet periods. Our forecast takes into account the exceptional mild weather experienced in the last two years, and our forecast increases for 2015/16 with the assumption this will be a more typical winter. We then expect to make year on year improvements, whilst outperforming the target every year during RIIO-GD1.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Annual repair risk | <34.5m | 34.4m | 24.8m | 28.0m | 27.2m | 26.4m | 25.6m | 24.8m | 24.0m |

**Figure 3.14: Annual repair risk forecast**

### Percentage of repairs completed within 12 hours

We also have a requirement to complete repairs within 12 hours. We have committed to a gradual improvement in performance across RIIO-GD1. The table below details this target, and includes our forecast against this – we expect to outperform our targets in every year.

| | RIIO year 2 target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| % repairs completed within 12hrs | 60..25% | 62.3% | 62.9% | 63.0% | 63.3% | 63.5% | 63.8% | 64.0% | 64.3% |

**Figure 3.15: % repairs completed within 12 hour forecast**

We achieved 62.9% in 2014/15 against a target of 60.25%, an excellent performance which was achieved through the drivers for improvement detailed above.

## 3.2.4 Major Accident Hazard Prevention

The existing safety requirements on NGN in relation to Major Accident Hazard Prevention are set out in legislation and monitored by the HSE. There are three outputs in this area. Two are related to compliance with legislation and the other relates to risk removal from sub-deduct networks.

As outlined in the table below, we are not forecasting any breach of legislation and expect to achieve our target in relation to sub-deduct risk removal.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Compliance with the Control of Major Accident Hazards regulations (number of breaches) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Compliance with the Gas Safety (Management) Regulations (GS(M)R) (number of breaches) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sub-deduct networks 'off-risk' by the end of RIIO | 135 | 9 | 69 | 28 | 6 | 6 | 6 | 6 | 4 | 134 |

**Figure 3.16: Major accident hazards prevention forecast**

### Compliance with the Control of Major Accident Hazards Regulations (COMAH) (1999)

This output requires us to demonstrate that we have fully complied with COMAH and set out the details of any non-compliance within the relevant year. It requires us to have a major accident prevention policy backed by a robust safety management system. We have detailed policies and procedures in place to manage compliance. In addition to this a number of measures are used to demonstrate compliance with COMAH including;

- External independent audit of COMAH sites;
- Internal audit conduct periodic audits of our compliance process;
- Emergency plans are produced/reviewed and are placed on operational COMAH establishments;
- HSE notifications are recorded as part of compliance monitoring and output reporting;
- Emergency exercises are undertaken in line with NGN exercise programmes; and
- HSE site interventions also assist in the verification of COMAH compliance.

Our asset strategy and integrity team review the above detail three times per year and report compliance to the Asset Risk Management and Safety Director.

In addition, we have a storage strategy to reduce risk from the network by the removal of all low and high pressure storage holders. This eliminates the legislative requirement associated with gas storage, set out in the COMAH Regulations. The strategy also addresses the HSE concern of societal risk associated with operating such assets in close proximity to public dwellings.

We have had no COMAH breaches in 2014/15. Our target is to have no breaches during RIIO-GD1.

### Compliance with the Gas Safety (Management) Regulations (GS (M)R)

This output requires NGN to demonstrate that it has fully complied with GS(M)R and the safety case required by this legislation. The culture of compliance with the safety case is embedded throughout NGN.

Our output target is to maintain full compliance with GS(M)R during RIIO-GD1. We have achieved this in 2014/15 and expect to in every year of RIIO-GD1.

#### Sub-deduct networks 'off-risk' by the end of RIIO GD1

A sub deduct network is a network configuration which consists of a primary meter, pipes and one or more secondary meters. The owner and operator of these networks is not always clear, presenting a potential safety risk. This risk can be removed by reengineering the pipes and meters, or by establishing that a third party formally accepts responsibility for them.

At the start of RIIO-GD1 there were an estimated 134 sub-deducts connected to our network. One additional site has been identified by Xoserve this year bringing the total number of sites to 135. Our target is to remove the risk from these networks by the end of RIIO-GD1. This year we have re-engineered twenty one sub-deduct networks and removed eighteen secondary meter installations to remove the identified risk, at a cost of less than £100k. Another thirty sites have been identified as no longer being sub-deducts.

We expect to remove c50% of the remainder with the next 12 months using a risk based approach. The remaining outstanding sub deducts will be phased over the rest of RIIO-GD1.

## 3.2.5 Asset Health

The measurement of the health of our network assets at the end of 2014/15 shows that we are on track to deliver the improvements agreed by the end of the RIIO-GD1 period. Asset Health is one of the key parameters that informs our investment planning and decision making processes and a key measure of the value that we are delivering for our customers.

Our investment programme and the associated improvements in asset health is dominated by the replacement of metallic mains and services under the Repex programme. We are ahead of our target for mains, driven mainly by our decision to accelerate the replacement of iron mains over the first three years of RIIO-GD1. Services are slightly behind target due to the lower than forecast reactive workload to date. We are trialling a bulk service renewal programme in 2015/16 which if successful will be repeated in future years to achieve our related outputs.

The forecast asset health improvements for our other assets is less linear than that for mains and services. A significant element of our investment, primarily relating to assets such as Offtakes and Pressure Reduction Stations (PRS), is forecast to deliver asset health improvements from the middle of RIIO-GD1 and beyond.

The complex nature of these projects requires significant design, planning and procurement timescales, much of which has been undertaken in the first two years of RIIO-GD1. The health of these assets has been held constant over that period. From 2018 we will see significant investment and upgrades at 8 of our 23 Offtakes sites and 19 PRS sites. This will deliver significant advances in asset health and place us ahead of the RIIO-GD1 targets. This also applies to investment in our assets such as district governors. The programme includes the replacement of a significant number of underground modules with above ground installations. The significant lead times on the purchase of land and design means that this programme will be delivered over the remaining years of RIIO-GD1.

The health of the assets on our network is dynamic and we continue to monitor, update and improve our asset information. This additional information can indicate that the health of certain assets is below previous assessments. In 2014/15 integrity data led to us increasing the frequency of assessments on OLI1 pipelines. Once this data has been validated, the health of these assets can be reassessed and investment reprioritised as necessary.

During the first two years of RIIO-GD1 we have prioritised investment across a number of asset classes in the poorest condition, allowing us to significantly improve asset health. These asset classes include steel mains, risers, high pressure storage vessels, offtake odorisation and instrumentation, and service governors. Each of these asset categories are now ahead of our planned position at the end of the first two years and have been key contributors to the overall improvement in the asset health of the network.

Work is continuing to develop and implement a new methodology for asset health assessment and asset risk trading. This will provide a more accurate and robust approach to making investment planning decisions. This new methodology will be in place to report on performance at the end of 2015/16.

## 3.3 Reliability outputs

The aim of the reliability output measures is to promote a network capable of providing long term reliability, whilst adapting to climate change, as well as minimising the number and duration of interruptions.

| Eight Year Outputs | RIIO-GD1 Year 2 inferred target | 14/15 | RAG |
|---|---|---|---|
| **Loss of supply** | | | |
| Number of planned interruptions | 50,448 | 57,434 | A |
| Number of unplanned interruptions | 8,408 | 13,034 | R |
| Duration of planned interruptions (mins-millions of) | 27.3 | 30.3 | A |
| Duration of unplanned interruptions (mins-millions of) | 7.8 | 4.2 | G |
| **Network capacity** | | | |
| Meeting NGN's 1 in 20 planning standard (MWh pa) | 512,701 | 502,916 | G |
| PRI utilisation and capacity | *Phased plan* | *On target* | G |
| **Network reliability – maintaining operational performance** | | | |
| Percentage by volume of offtake meter errors | <0.1% pa | 0.0% | G |
| Number and duration of telemetered faults | 211 pa | 63 | G |
| Pressure System Safety Regulation (PSSR) Faults (A1 and A2 faults per number of AGIs) | 0.51 pa | 0.26 | G |
| Gasholder decommissioning | 2 | 2 | G |

**Figure 3.17: Reliability outputs 2014/15 performance**

The table above shows the reliability outputs which all have an eight year output target. In most cases we have inferred an annual target based on the eight year target in order to track progress.

Our year two performance on reliability outputs has been good. Whilst we unfortunately had more unplanned interruptions than target, the actual length of time customers were without gas was significantly better than target.

We expect to deliver all our reliability outputs with the exception of the number of unplanned interruptions. We will significantly outperform the target set for customer minutes lost. More detail on each individual measure can be found in the following sections together with our forecasts for the RIIO-GD1 period.

## 3.3.1 Loss of supply

The loss of supply outputs cover our performance in relation to interruptions, which are classified in two ways:

- **Planned** – prior notification that the gas supply will be interrupted is provided to the customer, typically associated with work planned by NGN, such as mains replacement; and
- **Unplanned** – no prior notification is given to the customer. Causes include problems with our assets (upstream of the ECV), damage to assets by third parties, and water ingress.

The output targets are to keep the number and duration of planned and unplanned interruptions over the RIIO period below the levels set out in the table below. There are no formal year on year targets.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of planned interruptions | 403,585 | 43,276 | 57,434 | 52,000 | 50,800 | 50,500 | 50,500 | 47,500 | 47,500 | 399,510 |
| Number of unplanned interruptions | 67,263 | 11,464 | 13,034 | 12,500 | 12,000 | 11,500 | 11,000 | 10,500 | 10,000 | 91,998 |
| Total number of interruptions | 470,849 | 54,740 | 70,468 | 64,500 | 62,800 | 62,000 | 61,500 | 58,000 | 57,500 | 491,508 |
| Duration of planned interruptions (mins-millions of) | 218.46 | 22.4 | 30.3 | 24.2 | 22.7 | 22.6 | 22.5 | 20.8 | 20.7 | 186.2 |
| Duration of unplanned interruptions (mins-millions of) | 62.7 | 4.8 | 4.2 | 4.1 | 4.1 | 4.0 | 4.0 | 3.9 | 3.9 | 33.0 |
| Total duration of interruptions | 281.2 | 27.2 | 34.5 | 28.3 | 26.8 | 26.6 | 26.5 | 24.7 | 24.6 | 219.2 |

**Figure 3.18: Loss of Supply forecasts**

### Number and duration of planned interruptions

We had 57,434 planned interruptions in 2014/15, with a duration of 30.3 millions of minutes (mm). This is above our year two target, but the main driver for this is that we have abandoned c47km more Tier 1 main this year than that contained in the allowance. This was as a result of our strategy to target poor performing mains and get ahead of our workload targets to provide us with further flexibility when managing work for the rest of RIIO-GD1.

In 2015/16 we expect to complete a programme of c2,000 bulk service renewals in support of the service replacement output. This should lead to a corresponding increase in planned interruptions, but we expect this to be offset by another programme to complete c24km of mains replacement using live service insertion which does not require an interruption. We will monitor the success of both of these programmes in order to determine whether to continue and at what level in future years.

Our year by year forecasts for RIIO-GD1 take into account the phased mains replacement delivery plan, the primary driver of planned interruptions. We are looking to further improve all aspects of the management and control of our replacement programme to minimise any project churn and hence impact on the customer. This will also support delivery of this output. Overall we are on track to outperform the eight year RIIO-GD1 output target.

### Number and duration of unplanned interruptions

We had 13,034 unplanned interruptions in 2014/15, with a duration of 4.2mm.

Our unplanned interruptions duration performance has shown a 12% year on year decrease which was ahead of expectations. This is an excellent result which minimises the impact an interruption has on our customers. This improvement reflects the increased management focus we have placed on ensuring that supplies are restored as soon as possible.

The number of unplanned interruptions is an improvement on our historical performance, although behind target. The target was set based on an assumption that the number of unplanned interruptions was directly in our control. However the causes and predictability of unplanned interruptions are diverse and random. Consequently they are much less within our direct control than assumed when the target was set. For instance we continue to see increasing numbers of interruptions due to faults on the Emergency Control Valve, which represent c40% of our total unplanned interruptions.

Our forecasts for the remainder of RIIO-GD1 assume a targeted year on year improvement. We will deliver this by further embedding a customer focused management approach to unplanned interruptions. We operate a daily conference call to review, in detail, the outstanding position on all 'open' interruptions, which is attended by a cross section of operational managers and field operatives. These meetings have identified areas for improvement, such as training and equipment use, and embedding ownership of the customer, which has increased focus on the management of interruptions.

We are also carrying out a programme of targeted bulk service renewals in 2015/16 on the worst performing services. The replacement programme itself should also drive reductions in unplanned interruptions.

We believe that we will not achieve the RIIO-GD1 target for the number of unplanned interruptions, but will significantly reduce the duration of such interruptions and therefore significantly exceed our targets for reduction in customer minutes lost.

## 3.3.2 Network capacity

### Meeting NGN's 1 in 20 planning standard

This output requires our network to have sufficient capacity to ensure that customers' gas supply is not interrupted during periods of highest demand. Estimates of peak customer demand in 1 in 20 weather conditions have been falling since 2005 as a result of high energy prices, the economic downturn and increased energy efficiency.

Forecasts of peak demand are reviewed annually and are a primary influence on the modelling and capacity planning processes within NGN. The demand forecasting process employs specific modelling techniques which identify the peak (1:20) demand over a period of ten years. This is used alongside our storage simulation model which identifies the peak storage requirements using historic demand and weather patterns over a 75 year period.

The table below details our latest forecasts. We expect to be fully compliant throughout RIIO-GD1.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Meeting NGN's 1 in 20 planning standard (MWh pa) | 512,701 | 500,315 | 502,916 | 492,560 | 491,389 | 490,397 | 487,966 | 482,164 | 475,299 |

**Figure 3.19: Meeting NGN's 1 in 20 planning standard forecast**

### Asset utilisation and capacity outputs

Offtakes enable gas to be taken from the National Grid transmission system into NGN's high pressure pipe network. Pressure Reduction Installation's (PRI) then enable onward transportation through the network to customers. To meet our supply obligations, both of these asset types need to be technically compliant and capable of meeting the required throughput volumes. If not, then we invest to upgrade or replace the asset.

Our output targets for improving the utilisation of our assets are outlined below.

| Capacity utilisation | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Utilisation < / =50% | 51 | 51 | 59 | 59 | 58 | 57 | 56 | 54 | 53 |
| Utilisation 50% < I <=70% | 52 | 58 | 56 | 55 | 53 | 53 | 50 | 49 | 48 |
| Utilisation 70% < I <=80% | 45 | 25 | 27 | 28 | 30 | 33 | 36 | 38 | 41 |
| Utilisation 80% < I <=100% | 44 | 49 | 44 | 46 | 47 | 48 | 49 | 51 | 52 |
| Utilisation > 100% | 0 | 10 | 9 | 7 | 6 | 4 | 3 | 2 | 0 |

**Figure 3.20: Asset utilisation and capacity forecasts**

On an annual basis we undertake a full and detailed network analysis of all PRIs and Offtakes using our Prism and Graphical Falcon modelling tools. Aligning this work with our expected maximum flow data allows us to identify where specific site investment is required to maintain each unit within an acceptable utilisation band. This ensures we make the investment at the latest opportunity allowing us to avoid 'gold plating' of the system.

Our target is improve our asset utilisation position over RIIO-GD1. The table above shows our current forecast for this output. We will achieve this by designing two site upgrades per annum, which will then be completed the following year.

## 3.3.3 Network Reliability

### Maintaining operational performance

The primary output associated with Network Reliability is maintaining levels of operational performance across the network. This will be measured by the four outputs outlined below.

| | Year 2 inferred target | 14/15 | RAG |
|---|---|---|---|
| % by volume of offtake meter errors | <0.1% | 0% | G |
| Number of 'now' faults * duration in hrs / number of telemetered AGIs | 196 | 63 | G |
| Number of PSSR A1 and A2 faults per number of AGIs | 0.51 | 0.26 | G |
| Gasholder decommissioning | 2 | 2 | G |

**Figure 3.21: Network reliability 2014/15 performance**

### Percentage by volume of offtake meter errors

NGN is responsible for measuring and reporting meter accuracy for the delivery of gas from the NTS into our network. This is measured through a process administered by the Joint Office of Gas Transporters, which requires the identification and reporting of potential meter errors as part of a measurement error notification process.

There is a common industry output target for RIIO-GD1 in relation to meter error of no greater than 0.1% of total throughput (measured in GWh).

| | Year 2 inferred target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Offtake meter errors | <0.1% | <0.002% | 0% | <0.1% | <0.1% | <0.1% | <0.1% | <0.1% | <0.1% |

**Figure 3.22 Offtake meter errors forecast**

All our offtake metering systems have been assessed for accuracy and repeatability through the full flow range with results assessed to identify sites where the accuracy and reliability could be improved by introducing new technology. A program of metering upgrades has been developed to replace the old metering systems with the latest ultrasonic meters which are more efficient as they have a higher accuracy through the full flow range and require less maintenance.

Meter errors can take a significant period of time to progress through the process detailed above. We have received no new meter error reports in 2014/15. The review into the meter error we reported in 2013/14 concluded that any error was immaterial. We expect to be within target for every year of RIIO-GD1.

### Number and duration of telemetered faults

RIIO-GD1 includes output targets covering our response to telemetered faults on Above Ground Installations (AGI). This is measured as the average duration of 'now' faults per AGI. We have an output target to reduce the number and duration of telemetered faults over RIIO-GD1 as detailed in the table below.

| | Year 2 inferred target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Number of 'now' faults * duration in hrs / number of telemetered AGIs | 196 | 105 | 63 | 130 | 120 | 109 | 98 | 92 | 86 |

**Figure 3.23: Telemetered faults forecast**

In 2014/15 we experienced 63 faults against a target of 196, a year on year reduction of 42, further improving our outperformance for this output, an excellent performance. Our system control and network maintenance functions have continued focussing on this output. Fault data is reviewed through weekly reports, which drives the reduction and close out of faults quickly and efficiently. They also hold monthly fault meetings to continuously identify further opportunities to reduce faults. This then drives a prioritised programme to remove equipment identified as at the end of asset life, replacing it with new technology.

### Pressure Systems Safety Regulations (PSSR) faults

Statutory inspections are carried out on our above two bar network under the Pressure Systems Safety Regulations which can find faults. Addressing PSSR faults allows us to limit the deterioration of network assets. Faults are reported by reliability categories, with A1 (imminent danger) being the most serious.

This output measure was not consistently defined across the GDNs, and so it has been agreed that all GDNs will move to a revised consistent approach when this has been reviewed further.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Number of PSSR A1 and A2 faults per inspection | 0.51 | 0.43 | 0.26 | 0.50 | 0.50 | 0.49 | 0.49 | 0.48 | 0.47 |

**Figure 3.24: PSSR faults forecast**

The RIIO-GD1 target for the proposed new measure is <0.51 faults per inspection. We have achieved 0.26 faults per inspection in 2014/15, well below the target, and a year on year improvement of 0.17. This improvement was achieved through a combination of targeted asset upgrades and maintenance, and robust monitoring and control of inspections and their recommendations. The target reduces year on year throughout RIIO-GD1, and we expect to outperform this target every year.

### Gasholder decommissioning

We currently have 44 low pressure gasholders at 31 sites spread across the network which are no longer required to operate the network. We have a gasholder decommissioning programme that will reduce the risks associated with gas storage and the requirements set out in COMAH Regulations for managing gas storage assets. The programme also removes a number of other requirements to inspect and maintain the holders, in addition to the costs of maintaining such ageing assets.

The programme will have an overall customer and stakeholder benefit. Our plans include the phased demolition of all of these gasholders over a 16 year period which started in April 2013.

Our output target for RIIO-GD1 is to decommission a minimum of 23 gasholders. We successfully completed the decommissioning of two holders in 2014/15, in line with our plan.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of gasholders decommissioned | 23 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 5 | 23 |

**Figure 3.25: Gasholder decommissioning forecast**

## 3.4 Customer service outputs

The aim of the customer service output measures is to improve levels of customer satisfaction from the activities carried out by NGN. The outputs also seek to encourage us to undertake effective engagement with our stakeholders and reflect their views in the day to day operation of our business.

There are no specific RIIO targets, only a sliding scale penalty or reward based on our performance.

| One Year Outputs | RIIO-GD1 year 2 target | 14/15 | RAG |
|---|---|---|---|
| **Customer satisfaction survey** | | | |
| Unplanned interruption (Overall satisfaction score from 0-10) | 9.0 | 9.4 | G |
| Planned interruption (Overall satisfaction score from 0-10) | 8.5 | 8.7 | G |
| Connections (Overall satisfaction score from 0-10) | 8.4 | 9.0 | G |
| **Complaints** | | | |
| Complaints metric | 11.6 | 2.7 | G |
| **Stakeholder engagement** | | | |
| Maximise rewards under the stakeholder incentive target (score from assessment panel) | <5.0 | 5.5 | G |

**Figure 3.26: Customer service outputs 2013/14 performance**

We have achieved an excellent outcome in our customer service outputs, achieving the number two ranking in customer satisfaction amongst the gas networks, significantly improving our complaint handling and performing well in the stakeholder engagement assessment.

In addition we have had much recognition outside of the utilities sector for our customer service performance. Over the last twelve months we have won 9 awards for our customer performance, including the prestigious National Business Award for Best Customer Experience.

We expect to maintain and build on our year two performance and be the best in customer service. More detail on each individual measure can be found in the following sections together with our forecasts for the rest of the RIIO period.

### 3.4.1 Customer Satisfaction Surveys (CSS)

Customer satisfaction surveys involve interviews with customers based on the interaction that they had with NGN in relation to:

- A new or altered connection;
- An unplanned interruption to a gas supply as a result of a gas leak; or
- A planned interruption as a result of work targeted by NGN.

No specific targets have been set for the customer satisfaction outputs. However, there are baseline targets for the associated financial incentive scheme. We are aiming to achieve the maximum reward under the scheme, and so the scores necessary to achieve this are our minimum targets. We are forecasting to outperform these targets throughout RIIO-GD1, as detailed in the table below.

| | NGN RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Unplanned interruption (Overall satisfaction score from 0-10) | 9.0 | 9.3 | 9.4 | 9.4 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| Planned interruption (Overall satisfaction score from 0-10) | 8.5 | 8.4 | 8.7 | 8.7 | 8.7 | 8.8 | 8.8 | 8.8 | 8.9 |
| Connections (Overall satisfaction score from 0-10) | 8.4 | 8.6 | 9.0 | 9.0 | 9.0 | 9.1 | 9.1 | 9.1 | 9.1 |

**Figure 3.27 Customer satisfaction survey forecasts**

We have achieved our targets in 2014/15 and increased our satisfaction scores across all three service delivery measures – unplanned interruptions, planned interruptions and connections.

Our focus on delivering exceptional customer experience has become business as usual. Pivotal to this has been the continuation of our weekly customer meetings, attended by the NGN CEO and representatives from across all areas of the business. This meeting has evolved into the NGN discussion, and is a forum to debate current and future business issues. Customer experience remains the key theme in the discussions, which have proved extremely useful in engaging all parts of the business in our ambition to be the best.

The last twelve months have seen us focus our energy on looking at our processes and technology in more detail. We have recently introduced a new Customer Experience Management System which will give us 360 degree view of our customers' interactions with NGN, as well as helping us to communicate with our customers across all channels. We have also integrated this system with our work management tool, which again helps us to provide information about our customers at the touch of a button.

Looking forward to 2015/16, we are exploring new ways to get customer feedback, and also mature our approach to tailor the experience for our many different types of customers. These improvements should help consolidate our class leading performance, and drive further innovations for the benefit of all our customers.

### 3.4.2 CSS results for unplanned interruptions

In 2014/15 we have delivered a score of 9.4, an increase from 9.3 in 2013/14.

We have achieved this improvement by keeping focus within our 9 patch model. Our operational teams created an improvement group, called Team 10, which has representatives from across each of the 9 patches. They have led some significant improvements this last year, including a review of all customer facing literature.

We have also concentrated our efforts on helping customers whom we need to refer to third parties. We understand that they may not always get a satisfactory resolution to their issues, so we always make contact with these customers to ask if there is any extra help that we can provide.

### 3.4.3 CSS results for planned interruptions

In 2014/15 we have delivered a score of 8.7, an improvement on our score of 8.4 in 2013/14.

In the last twelve months we have firmly embedded a 'mitigation plan' process into the development of all our planned interruptions work, which has really helped reduce disruption for customers. In addition, we have limited the amount of planned work we do during the winter months. This is directly linked to the extra workload flexibility we have built into our Repex programme by getting ahead of our workload targets. This allows us the flexibility to avoid customer sensitive work during the colder months.

In order to fully understand how our customers view our work, we have embarked on a programme of customer research. We started this year with our vulnerable customers, and commissioned an external piece of research to obtain feedback on how we could improve our planned work process for customers with additional needs. This research is now guiding us to take a further look at all our written communication, and this is currently being reviewed by specialist communications experts.

### 3.4.4 CSS results for connections

In 2014/15 we have delivered a score of 9.0, an improvement on our score 8.6 in 2013/14.

We have achieved this by rebuilding the whole connections process from a customer perspective, using a group of colleagues from within the business to drive the change through to the final stages of implementation. This team has managed everything from introducing a new 'app' to manage customer applications, through to redesigning all our connections literature.

Over the next twelve months we will be introducing an on-line payment option, which should help to improve the experience for our connections customers even further.

### 3.4.5 Complaints metric

Under RIIO-GD1, complaints performance is incentivised through penalties for poor performance. Our aim is to avoid any penalties for all of the eight years of RIIO-GD1.

Performance is measured via the complaints metric, which is a composite score calculated as the sum of each GDN's performance against four elements. The table below summarises the four elements and our performance in 2014/15.

| | **Complaint Scores** |
|---|---|
| Percentage of complaints unresolved after one working day | 19.0% |
| Percentage of complaints unresolved after 31 working days | 1.3% |
| Percentage of repeat complaints | 0.7% |
| The number of Energy Ombudsman (EO) decisions that go against NGN as a percentage of total complaints received | 0.0% |

**Figure 3.28: Complaint metric breakdown**

The above scores for 2014/15 generate a weighted complaint score of 2.7, which does not generate any penalties. Penalties would only be imposed if our score was 11.57 or more. Therefore, a score of 2.7 is an excellent performance, but one we are looking to improve on in future years.

| | RIIO Maximum target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Complaints Metric | 11.57 | 4.8 | 2.7 | 2.4 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 |

**Figure 3.29: Environmental broad measure forecast**

We have achieved this by continuing to target our focus on resolving customer issues first time, by introducing our 90 in 60 process. This is a commitment to agree resolution to customer complaints 90% of the time in 60 minutes. This drives us to follow up quickly with our customers, or even better, resolve the issue during the customer's initial contact. This then gives us a greater chance to meet Day +1, and delight our customers with a speedy response.

To further support this, we have introduced a daily call for all managers with open complaints. We use this to work together to understand if there are going to be any difficulties in resolving the complaint and provide support where necessary. Through this we have seen a significant improvement in the length of time that it takes to resolve complaints. We very rarely have any complaints that are open beyond 5 days, and our customers have given us very positive feedback about our complaints handling process.

We continue to look at the root cause of our complaints, and information called 'shared learnings' is pulled together on a weekly basis and circulated to all. This has helped to identify key failings and ensure that all business areas learn from them.

### 3.4.6 Stakeholder engagement

We have always recognised that our work significantly impacts our stakeholders and customers, so we have always liaised closely with both. Our target is to provide consistent and quality stakeholder engagement, deliver on our promises and, through this, maximise the rewards available through the incentive.

We are currently awaiting final confirmation of the award for 2014/15. In 2013/14 we achieved a score of 6.75 from the independent panel and our aim is to build on this solid foundation year on year.

Over the past three years, in support of an ambitious programme of business improvement, we have established a more robust engagement strategy which is driven by senior management, delivered by all, aligned with our wider business objectives and independently audited each year.

The strategy has taken time to develop and bed in, and at the time of our stakeholder submission in 2014 some of the underlying processes were still in their relative infancy. The past 12 months have given us the opportunity to strengthen these processes, and respond to the areas of improvement and development identified. Our emphasis in 2014/15 has been around;

- Embedding stakeholder engagement across the business – by simplifying guidance and providing support for colleagues, so that everyone understands the role they can play in effective engagement;
- Strengthening governance – to ensure co-ordination of delivery, feedback and outcomes across the business;
- Developing an annual stakeholder plan – to align to our wider business planning and ensure our strategy is always current, co-ordinated and measured;
- Launching new communication channels – including an on-line stakeholder community and an e-bulletin. These have been developed in response to stakeholder feedback, and allow continual dialogue;
- Engaging 'hard to reach' stakeholders – including vulnerable customers, commuters and small businesses affected by our works;

- Sector wide collaboration – working more closely with other utility companies and wider partners to develop joint approaches to some of our key issues; and
- Strengthening our stakeholder measures – establishing a quarterly benchmarking process which is helping us to monitor how well we are delivering our stakeholder engagement and identify areas for improvement.

Feedback from our most recent independent audit has highlighted the significant progress we have made over the past 12 months.

"*NGN has built on its strong foundation of stakeholder engagement across the company, in particular business culture, strategic response to stakeholder needs, and resources in place in to support engagement. No areas for serious concern were found, and several areas of good practice are identified in the findings."*

**SGS independent audit report, February 2015**

# 3.5 Environmental outputs

The aim of the environmental output measures is to reduce the environmental impacts of gas distribution. This is delivered through the measures detailed below. The outputs in this area are split into a broad measure and a narrow measure.

The outputs under the broad environmental measure are aimed at ensuring that we play a role in delivering a low carbon energy sector. The most prominent role involves facilitating the connection of new renewable gas plant. As we don't have control over the delivery of such connections, the output measures are more around assisting and promoting such development rather than specific targets for the amount connected. The outputs and our achievements are set out below.

The outputs under the narrow measure are aimed at minimising the environmental impact of our own activities.

## 3.5.1 Broad measure

| Eight Year Output | Inferred annual target | 14/15 | RAG |
|---|---|---|---|
| Total capacity of biomethane connected (MW) | No target | 13 | G |
| Total capacity of biomethane enquiries/applications in progress (MW) | No target | 326 | G |
| Information provision and arrangements for customers wanting to inject gas on the distribution network | No target | Met | G |
| Voluntary standards of service: 15 day response to initial enquiry under 7 bar | 100% | 98% | A |
| Voluntary standards of service: 30 day response to capacity study under 7 bar | 100% | 100% | G |

**Figure 3.30: Environmental broad measure 2014/15 performance**

In 2014/15 we have seen a near doubling in the number of enquiries received in the year as the interest in biomethane connections has increased. This also recognises that the Renewable Heat Incentive (RHI) provided by Government to support such investment is reviewed every six months, and has consistently been reduced as more connections have been made. The RHI at the time of any new connection lasts for the life of the connection. This has provided a clear incentive for interested parties to accelerate their plans and obtain the best possible RHI rate.

We have connected one new biomethane plant at Howden in conjunction with Northumbrian Water in the last year, with a total capacity of 13MW. As a result of the above increase in interest we now have ten firm projects to be delivered within the next eighteen months, and expect more to follow with the rate and interest partly dependent on movements in the RHI.

The table below provides a forecast of enquiries and connections for the RIIO-GD1 period, together with performance against the voluntary standards of service. The voluntary standards of service currently cover pre quotation data. These will be expanded to include quotation timescales, work scheduling and work completion when we have more experience of the market place. We had 1 failure in the '15 day response to initial enquiry under 7 bar' category this year. Our resource supporting this area has been increased to ensure we respond appropriately to all enquiries.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Total capacity of biomethane connected (MW) | No target | 0 | 13 | 140 | 170 | 200 | 230 | 240 | 250 |
| Total capacity of biomethane enquiries/applications in progress (MW) | No target | 130 | 326 | 260 | 190 | 150 | 100 | 50 | 50 |
| Information provision and connection charging for distributed gas | No target | Met | Met | - | - | - | - | - | - |
| Voluntary standards of service: 15 day response to initial enquiry under 7bar | 100% | 100% | 98% | 100% | 100% | 100% | 100% | 100% | 100% |
| Voluntary standards of service: 30 day response to capacity study under 7bar | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

**Figure 3.31: Environmental broad measure forecast**

## 3.5.2 Narrow Measure

The table below shows the narrow environmental measure outputs, which all have an eight year output target. In most cases we have inferred an annual target based on the eight year target in order to track progress.

| Eight Year Outputs | Inferred Annual Target | 14/15 | RAG |
|---|---|---|---|
| **Shrinkage gas** | | | |
| Shrinkage baselines (GWh) | 445 GWh | 397 | G |
| Leakage baselines (Gwh) | 420 GWh | 375 | G |
| **Business Carbon Footprint (BCF)** | | | |
| BCF excluding shrinkage | None | 9,244 Tn | R |
| **Other emissions and natural resource use** | | | |
| Number of sites where statutory remediation has been carried out | None | 0 | G |
| Use of virgin aggregate | None | 29,426 Tn<br>23% | A |
| Amount of spoil to landfill sites | None | 18,565 Tn<br>10% | A |
| ISO14001 major non conformities | None | 0 | G |

**Figure 3.32 Environmental narrow measure 2014/15 performance**

Our 2014/15 performance on the narrow measure was satisfactory overall. An excellent performance on shrinkage gas reduction (which is 95% of our business carbon footprint) was coupled with a mixed performance on the other emissions and natural resource use outputs.

### Shrinkage gas

We are responsible for purchasing gas to replace the gas lost through shrinkage. Shrinkage comprises leakage from pipelines (c.95%), theft from the gas network (c.3%), and own use gas (c.2%). We have set output targets to reduce the amount of shrinkage and leakage from our network over RIIO-GD1. The table below sets out the target shrinkage and leakage volumes set out in our Licence against our actual and forecast performance.

| (GWh) | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|
| Shrinkage baselines | 459 | 445 | 433 | 423 | 412 | 401 | 390 | 379 |
| Shrinkage actual | 421 | 397 | 388 | 378 | 368 | 357 | 347 | 336 |
| Leakage baselines | 434 | 420 | 408 | 398 | 386 | 376 | 364 | 354 |
| Leakage actual | 399 | 375 | 366 | 356 | 345 | 335 | 324 | 314 |

**Figure 3.33: Shrinkage and leakage forecasts**

We have outperformed both shrinkage and leakage targets in 2014/15 and plan to further outperform the annual targets throughout RIIO-GD1. We will achieve this through a combination of:

- Targeting our iron mains replacement programme at the leakiest pipes with the highest risk;
- Reducing system pressures through strong governance and close working practices between our pressure management, network validation and network maintenance teams, as well as the introduction of remote pressure monitoring and control equipment at targeted governor stations; and
- Effectively managing our levels and use of MEG (Monoethylene Glycol), a 'wet' gas used to saturate and swell metallic joints which otherwise may leak gas.

### Business Carbon Footprint (BCF) (excluding Shrinkage)

All GDNs are expected to reduce their BCF over time. No specific targets have been set for RIIO-GD1. However our performance will be compared with other GDNs and published on an annual basis.

We have continued to strengthen the BCF collation process during 2014/15. We have worked with our energy management consultants to ensure that the data provided both internally and by third parties is validated and accurate. We now undertake challenge and review of third party data at contract management meetings. All new contract awards will include specific environmental KPIs.

This improved accuracy in reporting is the primary driver for the increase in our reported business carbon footprint. We have also increased the number of directly employed NGN employees and occupied a new office in Leeds, which both increase energy consumption for powering office equipment and fuel use for fleet and business miles.

We have engaged a Lead Energy Assessor to undertake a selection of energy audits, covering depots, offices, operational sites and fuel use / mileage. This programme is being completed in line with the Energy Savings Opportunities Scheme 2014 (ESOS) and will be reported to the Environment Agency in December 2015. Energy saving initiatives have been identified and will be considered for implementation in accordance with pay-back periods. Identified initiatives include:

- Substitution of light bulbs with high efficiency alternatives, and the installation of new lighting systems;
- Exchange of electric heating and hot water with a gas powered supply;

- Implementation of Passive Infra Red occupancy controls; and
- Installation of multi-zone radiant heating and solar photovoltaic panels (PV).

We plan to implement a number of these initiatives next year which will lead to a reduction in our BCF over the course of RIIO-GD1.

We commissioned a low carbon fleet feasibility study into the use of alternative fuel vehicles this year. This highlighted that there is potential to improve economic and environmental performance of small panel vans by up to 38% through the use of electric vehicles. This potential is to be further assessed and where practical incorporated into the fleet replacement programme. In addition Green Road technology has now been rolled out across the entire NGN fleet providing visibility to the driver. Greenroad has the potential to save up to 25% on fuel.

The use of compressed natural gas (CNG) vehicles is under consideration and will be further investigated within the study being undertaken by NGN and Leeds City Council into the commissioning of a CNG refuelling point. This forms the basis of an NIC bid this year.

Our BCF is calculated across three categories, described as Scopes 1, 2, 3. The table below provides forecast figures, based on a 0.5% year on year reduction, based solely on Scope 1 (excluding shrinkage) and Scope 2 emissions as these are currently defined and understood. Scope 3 is excluded as this has an indirect impact and data is not readily available.

| | 12/13 Actual | 13/14 Actual | 14/15 Actual | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| NGN non-shrinkage BCF (Scope 1 and 2) - tCO2e | 8,593 | 8,722 | 9,244 | 9,198 | 9,051 | 8,949 | 8,928 | 8,928 | 8,903 |

**Figure 3.34: Business Carbon Footprint forecast**

### Other emissions and natural resource use

#### Statutory remediation of contaminated land

No specific targets have been set for statutory land remediation. During 2014/15 we undertook the first phase of reviewing our portfolio of sites with potential for land contamination. A total of 28 desk based and 12 intrusive land contamination surveys were completed to provide an updated assessment of the environmental risk and potential liability associated with each site. Based on these assessments, three sites have been prioritised for statutory environmental remediation works during 2015/16. A similar programme of remediation is forecast for completion throughout the remainder of RIIO-GD1 as shown in the table below.

A further 32 sites have been identified for desk based or intrusive surveys during 2015/16 to provide detailed environmental information to support our capital projects and provide an updated assessment of the environmental risks at each sites. We expect to carry out further studies throughout RIIO-GD1, with the study sites prioritised based on environmental risk and synergies with scheduled capital works.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Number of sites where statutory remediation has been carried out | None | 0 | 0 | 3 | 3 | 3 | 3 | 2 | 2 |
| Number of sites monitored or maintained | None | 0 | 40 | 32 | 35 | 35 | 30 | 25 | 10 |

**Figure 3.35: Statutory remediation of contaminated land RIIO forecasts**

### Use of virgin aggregate and amount of spoil to landfill

We have no specific targets in this area, but we have seen an improvement in the use of recycled aggregate and spoil diverted from landfill. We have achieved this by implementing enhanced contract management for service providers working on our replacement programme. Spoil and aggregate KPIs are set and included within a 'League Table' challenge where performance is recorded, verified and rewarded as appropriate.

Yorkshire Highway Authorities Utilities Committee (YHAUC) has comparatively very stringent sampling and analysis requirements which must be adhered to in order for recycled aggregate to be registered on their database. As a direct consequence there are very few registered suppliers of recycled aggregate in the NGN Yorkshire region. However we have worked with YHAUC and have now managed to deliver a reduced analysis / testing requirement in Yorkshire. In addition and as a result one of our existing suppliers is now expanding into East Yorkshire, a previously poorly provided area, with the potential of further expansion into North Yorkshire and further north.

The amount of spoil to landfill has reduced year on year as a result of our close working relationship with and monitoring of our replacement contractors. KPIs are included with all contractual agreements to ensure our targeted reduction plans are met. We have experienced some issues with high clay content in some areas, which some recycling centres are unable or unwilling to accept.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| Use of virgin aggregate | None | 37,862 Tn 28.58% | 29,426 Tn 23% | 29,000 | 28,500 | 28,000 | 27,500 | 27,000 | 26,500 |
| Amount of spoil to landfill sites | None | 61,555 Tn 35.99% | 18,565 10% | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 |

**Figure 3.36: Use of virgin aggregate and amount of spoil to landfill sites RIIO forecasts**

### ISO 14001 major non-conformities

We had an excellent recertification assessment in 2014 with no observed weaknesses. A new contract has been awarded to ERM CVS as a certification body. We will work with ERM CVS to update our HS&E management system and implement the new ISO 14001 (2015) standard.

We anticipate continued high level performance with no major non-conformities during RIIO-GD1.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| ISO14001 major non-conformities | None | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Figure 3.27 ISO 14001 major non-conformities output forecasts**

## 3.6 Social obligations outputs

The two aims of the social obligation outputs are to help alleviate fuel poverty through extending the gas network, and to improve awareness of the risks from carbon monoxide. There is also a general output to play an active role in addressing wider social issues. These outputs all have an eight year output target. In most cases we have inferred an annual target based on the eight year target in order to track progress.

| Eight Year Outputs | Inferred Annual Target | 14/15 | RAG |
|---|---|---|---|
| Number of fuel poor network connections | 1,500 | 1,707 | G |
| Providing all emergency staff with upgraded detection equipment which will enable them to test for the presence of carbon monoxide and provide appropriate advice | 200 | 200 | G |
| Ongoing programme of activities to improve general customer awareness of the danger from carbon monoxide | See Below | | - |
| Other social issues | See Below | | - |

**Figure 3.38: Social obligations outputs**

We have achieved all outputs in this category in 2014/15. Cumulatively we are slightly behind on delivery of fuel poor connections but expect to catch this up next year, and have done some excellent work on carbon monoxide and other social issues.

### 3.6.1 Number of fuel poor network connections

Our RIIO output target is to supply 12,000 gas connections to customers in fuel poverty over RIIO-GD1. However our aspiration has always been to exceed our target, and our current plans are to deliver 14,500 fuel poor connections in the same period. In order to achieve this we have put in place a number of initiatives and activities against a backdrop of revisions to fuel poverty definitions associated with the Fuel Poor Network Extension scheme.

| | RIIO target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of fuel poor network connections | 12,000 | 1,164 | 1,707 | 2,382 | 2,057 | 1,859 | 1,765 | 1,776 | 1,791 | 14,500 |

**Figure 3.49: Fuel poor workload forecast**

During 2014/15 we have delivered 1,707 fuel poor connections, higher than the annualised target, and recovering the relative shortfall of connections in 2013/14. We expect to further increase connections next year, then see a gradual reduction over the rest of RIIO-GD1.

The following is a summary of the key activities we are currently undertaking to ensure that we are able to match our promises in this area.

### Extension of fuel poor 'partners'

We were given approval by Ofgem to add two new fuel partners during the year - Warm Zones and Yorkshire Energy Services. They will complement our existing partner, Community Energy Solutions, and will broaden the reach and scale of engagement across our network. Additionally this brings added resilience to support arrangements and ensures that services provided are cost effective.

### Off-gas communities – extensions and infills.

We are;

- Working with partner organisations, predominantly registered social landlords and local authorities, to develop a work book that provides 'whole house' solutions. This ensures that those who benefit from an assisted connection are also supported with effective in house measures such as insulation and central heating;
- Developing innovative approaches to identifying Fuel Poor communities. We are using technology and data to map communities that can benefit from assisted connections;
- Active promotion of the Fuel Poor scheme via local authority and other sector publications has meant that the number of one off connections has increased from last year.

### Off-gas communities – rural

We are progressing support for remote rural communities, predominantly off gas, by working with Community Action Northumberland. Here we are developing a pilot project called 'Warm hubs', that looks to establish communal places in remote rural locations that can be equipped to provide a place of warmth and community during winter. This helps to combat the challenges of low income/vulnerable people living in cold unheated homes.

### Energy Challenges

- Multi Storey Buildings (MSB): We are continuing to work with Newcastle University, Newcastle Council and Northern Power Grid to consider energy solutions for MSBs. This is largely a social science engagement considering expectations and challenges for those living in high rise buildings.
- Working in partnership with the Children's society in Bradford, we have been able to access and support a significant number of people that would be hard to reach. Energy switching sessions, energy conservation and nutritional programmes have all been delivered to support fuel poor and vulnerable customers

### Fuel poverty awareness

National Energy Action (NEA) delivered fuel poverty awareness training to approximately 120 of our customer contact staff this year, after which we extended the training to cover the three staff that we fund through the Children's Society. The training has been well received and will be used as part of training/induction for all new connections staff.

We have worked to raise the profile of Fuel Poverty both internally and externally, presenting to a range of audiences including;

- NEA business Support Groups
- DECC
- Local Authorities/Registered Social Landlords
- Parent Group companies from Hong Kong and Australia
- Age UK
- Citizens Advice

Additionally, we have worked to develop improved reach through 'Infrastructure North', a virtual team consisting of NGN, Northern Power Grid, Northumbrian Water and Yorkshire Water.
When the Chancellor announced the £25m Central Heating Fund targeting first time central heating in the autumn statement, we immediately made Local Authorities aware of the scheme and have supported bids for funding from around 2/3 of our thirty four Local Authorities.

We were delighted when our efforts around addressing Fuel poverty were referenced in the Government's Fuel Poverty Strategy for England, using NGN as an exemplar for works of an innovative nature around Fuel Poverty with our work with the Children's Society in Bradford.

### 3.6.2 Carbon monoxide detection and awareness

Under this output measure we are committed to improving awareness of the dangers from carbon monoxide (CO). We are using two workstreams to achieve this, in addition to the collaborative work we carry out with the other gas networks.

Firstly, we are providing all emergency staff with a pioneering handheld device called a Gascoseeker, which not only detects the level of gas (methane) in the air, but also CO. This enables our emergency engineers to determine whether CO is present in a customer's home and detect the source with a much greater level of accuracy. We have now completed this programme with over 1,200 in use. During this year we have been able to detect 11 instances where CO had not previously been reported, potentially saving lives. In four of these instances the source of the CO was not from gas burning appliances. Instead it was from solid fuel and petrol engine equipment being used in an inappropriate manner.

We provide training so our engineers can safely inform and advise our customers regarding the detection of CO. In parallel to this we have also developed leaflets to leave with our customers explaining the dangers of CO. We continue to ensure our engineers deliver briefings to and leave information with our customers regarding CO, and have delivered 1,197 briefings this year.

Secondly, we have an ongoing programme of activities to improve general customer awareness of CO and its dangers. This includes;

- CO education in the classroom – an education programme aimed at Key Stage 3 pupils aged 11-14 to promote CO, its risks and symptoms, as well as an appreciation of the importance of carbon reduction, recycling and sustainable living;
- Customer CO briefings – we are the first GDN to deliver CO awareness briefings to customers in their homes following emergency call outs. These were aimed at the elderly and other vulnerable customers, but we have extended the remit to include any customers where it is deemed appropriate by the engineer on site; and
- iCOP and iCOP2 – in 2012 we launched an innovative smartphone app, aimed at 18-24 year olds living in rented accommodation – a key 'at risk' group. The app highlights the dangers of CO using an engaging film noir style detective game. A follow up is currently under development for release in June 2015, targeted at those attending festivals.

Recognising that we need to extend our reach and access to vulnerable customers, we also progressed further initiatives;

- Children's Society partnership – following our Fuel Poverty links with the Children's Society and recognising the difficulty accessing vulnerable customers, we trained and briefed staff from the Children's Society, who held two successful CO awareness events with more being planned for 2015
- In 2014, an NGN colleague identified a local youth project supporting vulnerable young adults near to one of our replacement schemes. Seeing this as an opportunity to raise CO awareness with a particularly vulnerable group we went on to deliver CO awareness briefings and issue CO alarms through the project.

- An incident in Flatbush, New York highlighted that the Jewish community were potentially at risk of CO poisoning due to the popularity of Shabbos Blech gas cookers. As a result in March we delivered a presentation at the Labriut Healthy Living Centre in Gateshead, alongside the fire service. As these centres are located throughout the UK, we have shared learnings from the session with the other gas distribution networks.
- Accredited Training – In April we held our first accredited training session with NGN staff and two charities, accredited by BPEC. This is part of our 'growing an army' plan. We intend to extend this by NGN becoming an accredited training centre, delivering more training to voluntary sectors and charities.

## 3.6.3 Other Social issues

As a major employer and service provider in the North of England, we have both an obligation and wide ranging opportunities to support the communities in which we operate, across a broad range of issues. We are engaged in several activities to support this obligation, which we fully intend to expand over RIIO-GD1.

The current activities include;

**Nutritional advice** – In partnership with the Children's Society, we have developed and rolled out sessions with residents of particularly deprived communities in Bradford. These sessions help educate them on basic cookery skills to encourage a more healthy lifestyle at a reduced cost. We will be following this up in 2015 with more sessions on 'Grow Your Own' food, and taste the difference sessions targeting own brand and reduced price staple foods.

**Energy Advice** – In partnership with Scotia Gas Networks we recognised hardship in the remote off grid rural communities in the Borders area. We jointly developed and engaged National Energy Action to pilot drop in sessions to encourage supplier switching and simple energy saving measures. We have held two initial sessions in Scotland and two in Northumberland. We plan to test these further during the winter of 2015.

**Community Promises** – Recognising the need to engage and inform customers and stakeholders regarding our plans to support communities, we developed our Community Promises document. This captures in a simple and easy to read format our plans to support communities around 5 key themes;

- Serve – our promises to our customers
- Stop – our commitment to supporting ending hardship
- Share – how people can expect to receive and provide information
- Shape – how we will develop our workforce and support education in the community
- Sustain – How we will protect the environment

Each of these areas has a Senior Manager responsible for delivery of our promises with compliance and governance through an overall Governance Group.

**Community Support – Off Grid Communities** – Recognising that not all people living in our Network have access to mains gas, and in partnership with Community Action Northumberland (CAN), we supported the launch of 'Warm Hubs'. This innovative project provides both warmth and opportunities for social inclusion. As part of the pilot CAN have refurbished a number of community premises in rural areas providing warmth and basic nutrition. These are available to those who struggle to heat their homes adequately. We will review the benefits to consider further locations to be made available during 2015 winter.

**Employee led charitable support**

We continue to support employees engaged in charitable services, and during 2014 developed our volunteering policy, which now makes available two paid days for our staff to engage in voluntary activities.

## 3.7 Connections outputs

The aim of the seven primary connections output measures is to ensure that NGN provides an efficient and effective service to customers wanting to connect to the gas network.

Our RIIO-GD1 output targets for connections are significantly higher than the obligations required by our Licence, reflecting our aim to provide a best in class service.

| One Year Outputs | RIIO annual target | 14/15 | RAG |
|---|---|---|---|
| % of standard connection quotes issued in 6 working days | 99.6% | 99.7% | G |
| % of non-standard connection quotes below 275kwh issued in 11 working days | 99.6% | 99.6% | G |
| % of non-standard connection quotes above 275kwh issued in 21 working days | 99.6% | 98.7% | A |
| % of land enquiries where response sent within 5 working days | 99.6% | 99.6% | G |
| % of commencement and completion dates for connections below 275 kwh provided within 20 working days | 99.6% | 99.8% | G |
| % of commencement and completion dates for connections above 275 kwh provided within 20 working days | 100% | 98.5% | A |
| % of connection jobs substantially completed on date agreed with customer | 95% | 98.6% | G |

**Figure 3.40: Connections 2014/15 outputs**

We have made further progress towards achieving these extremely challenging targets in 2014/15, with five out of seven of the outputs green this year, compared to two last year. We have achieved this improvement by introducing improved jeopardy reporting, and expanding refresher awareness and lessons learnt reviews.

These results cement the progress we have made to date, and are further backed up by the improvement in our connections customer satisfaction score. We expect to maintain or improve our performance for all the outputs over the next seven years.

We are preparing to measure our connections performance against Council of European Energy Regulators (CEER) targets in 2015/16. These represent a stretch on the existing GSOS standards the outputs are based on, and we expect this to deliver further improvements.

The table below compares our RIIO-GD1 output target with our actual performance to date and forecast performance for the remainder of the RIIO-GD1 price control period.

| | RIIO annual target | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 |
|---|---|---|---|---|---|---|---|---|---|
| % of standard connection quotes issued in 6 working days | 99.6% | 99.5% | 99.7% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% |
| % of non-standard connection quotes below 275kwh issued in 11 working days | 99.6% | 99.5% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% |
| % of non-standard connection quotes above 275kwh issued in 21 working days | 99.6% | 97.5% | 98.7% | 98.9% | 99.1% | 99.3% | 99.4% | 99.5% | 99.6% |
| % of land enquiries where response sent within 5 working days | 99.6% | 99.5% | 99.6% | 100% | 100% | 100% | 100% | 100% | 100% |
| % of commencement and completion dates for connections below 275 kwh provided within 20 working days | 99.6% | 99.3% | 99.8% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% | 99.6% |
| % of commencement and completion dates for connections above 275 kwh provided within 20 working days | 100% | 100% | 98.5% | 100% | 100% | 100% | 100% | 100% | 100% |
| % of connection jobs substantially completed on date agreed with customer | 95% | 97.2% | 98.6% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% | 97.5% |

**Figure 3.41: Connections forecast outputs**

Our connections delivery model underwent material changes in 2013/14, most notably with the relocation of the connections design and quotation operation from Edinburgh to our existing offices in Sunderland. We now have a new but fully established design team and back office support aligned to a new direct labour workforce who work closely together to deliver the best possible service.

In the last year we have focussed on consolidating the significant changes experienced last year, whilst further improving the performance of our delivery model. Notable activities this year include;

- Job swaps and role awareness sessions both in connections and with the wider business, in order to increase understanding and build relationships;
- Further increasing the focus on training the new teams through the NGN Academy, focussing on leadership and communications; and
- Taking all connections staff through 'To stay the best' sessions, reviewing and measuring the success of the various initiatives introduced since 2013, and ensuring all staff were aware of the impact they could have on performance and the customer.

The main focus in 2014/15 was to strengthen the work of previous years. However we have implemented a number of new initiatives to benefit customers, stakeholders and the business. These include;

- **One Stop Alters:** The ability to offer a customer wanting an alteration to pay on site and get the work done on the day or at a time of their choice. This helps in particular with those who did not foresee the need for the works and there is risk of the development being held up;
- **Cost review group:** A team of volunteers from within the connections business formed a group that reviewed the cost of each of our outputs with a view to getting the best possible price for the customer. One benefit they instigated was smarter planning, grouping together jobs to reduce traveling; and
- **Best practice sharing**: Sessions held with our stakeholders to share the different initiatives from which we have benefited in previous years. This included taking them through our end to end delivery models. Visitors included National Grid, Wales and West, Electricity North West and Northumbrian Water.


HUNTERS
Northern
Gas Networks

# Innovation

4

# 4 Innovation

## 4.1 Introduction

Many elements of the RIIO framework are intended to encourage innovation. These include strong emphasis on delivering outputs and lengthening the price control period to provide companies with more certainty of the rewards for successful innovation.

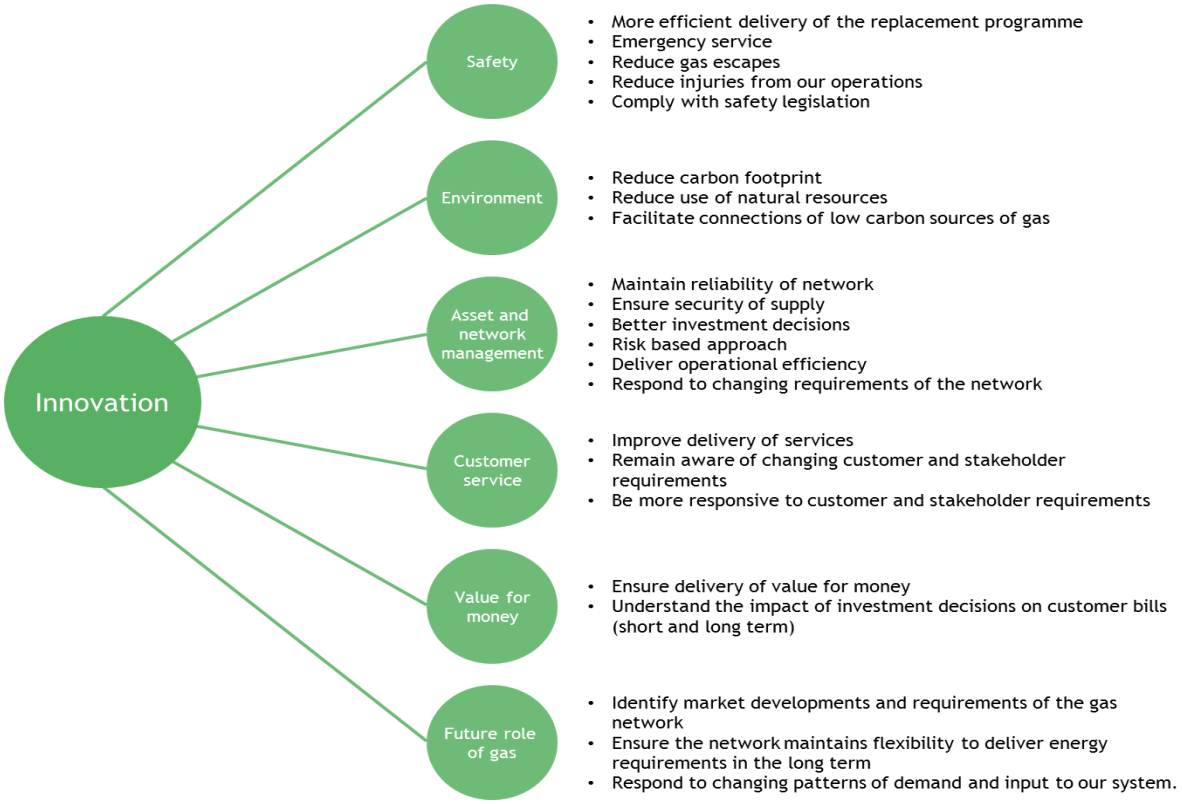
RIIO-GD1 includes a stimulus package to fund innovation where the commercial benefits may be uncertain and therefore stakeholders are unwilling to fund research and development projects speculatively. This stimulus package has three mechanisms where NGN can obtain additional funding for innovative projects.

- Network Innovation Allowance (NIA) – to fund smaller innovation projects that will deliver benefits to customers;
- Network Innovation Competition (NIC) – an annual competition to fund selected flagship innovation projects that would deliver low carbon and environmental benefits to customers; and
- Innovation Roll-out Mechanism (IRM) – to fund the roll-out of proven innovations which will contribute to the development in GB of a low carbon energy sector or broader environmental benefits.

## 4.2 Network Innovation Allowance

### 4.2.1 Refining our innovation strategy

As the innovation activites within NGN have matured, we realised we needed to adjust the focus of our innovation strategy so that it is more reflective of the UK's current and future energy needs. The six key focus areas remain:



Whereas these focus areas remain the same, our approach has changed, recognising that some innovation is best developed internally before sharing with the industry whereby other initiatives are best developed and delivered holistically.

Our revised strategy seeks to increase involvement across the business, as well as ongoing collaboration with the other gas networks. This enables us to deliver increasingly high impact initiatives whilst planning for tomorrow. The Future Role of Gas is an area with growing significance for NGN, the gas industry and the UK as a whole and has increased focus in our revised strategy.

### 4.2.2 A culture of innovation

#### Capturing ideas

The structure of our business is one where innovation is encouraged, enabled and rewarded. We have introduced a mechanism that makes it easy to capture the outputs of all those 'light bulb' moments our team members have on a daily basis.

ERIC (Encourage Real Innovation Culture) is our new, easy to use smartphone app which lets colleagues share their ideas or work related challenges wherever they are. With a quick and simple interface, the ability to attach photos and save any work in progress, ERIC allows feedback to be provided in real-time, as well as earning rewards.

The app has been developed by NGN in collaboration with the Energy Innovation Centre and its innovative name was suggested by a colleague as part of an internal competition. There have already been 54 ideas submitted since ERIC was launched in April 2014.

#### Collaboration

As the various networks' innovations functions mature, it is feeling more and more natural to work collaboratively and share best practice. There are a growing number of forums for us to compare notes both within and outside our industry such as:

- The **Gas Innovation Governance Group** (held monthly and hosted by a different GDN each time)
- **Low Carbon Network Innovation Conference** (Aberdeen, October 2014) – something we have pledged to support each year going forward including the 2015 event, taking place in Liverpool in November.

So far we have completed eight projects collaboratively, and have many more underway. Full details of all these projects can be found in the 'NIA Benefits Assessment' document located at:

http://corporate.northerngasnetworks.co.uk/innovation/

#### Implementation

To date we have successfully introduced a number of innovation projects into business as usual, such as magnetometers and CO Gascoseekers. This year we have continued to implement further technologies which have been developed using the funding, such as the Acoustic Camera and Core & Vac, as well as introducing new analytical tools which will help us better define our replacement model.

For full details of the benefits we have realised so far from our innovation expenditure, and details of the benefits we expect to realise moving forward, again please see the NIA Benefits Assessment document located as detailed above.

### Competitive tendering

Last year, although we were already recognising the benefits of accessing the knowledge of SMEs who were previously invisible to us, we also recognised this could be stronger if the communication flowed both ways.

We decided to be more proactive in developing calls for interest for specific projects from SMEs via the EIC, rather than waiting for the approaches to come to us.

Now, when a colleague flags up an issue, we share this with all of the SMEs on EIC's books to ask for them to submit details of their potential solutions. This has been successful in producing a wide variety of solutions we may not have thought of, enabling us to develop informed projects that not only seek to solve a specific internal problem, but also open the doors to input from brand new SME partners.

With theft of gas being a major issue for all GDNs, we approached the EIC to develop and issue a call for interest that included a detailed problem statement. We received a huge response ranging from proof of concepts through to recommendations for using pieces of kit already being used overseas. We are now developing this response into a project that will be open for all GDNs to collaborate on.

### Impact of standards

Last year we encountered numerous challenges in trialling new technology on the network because of constraints within historic policies and procedures (in some cases over 25 years old). This year we have not let these dictate the innovation, but have instead included a review of existing policies and procedures as part of the project and, where necessary, developed new ones.

## 4.2.3 Projects and expenditure

In total we have invested nearly £2.4m in innovation projects this year – an increase of £1m from last year. This demonstrates the effectiveness of our innovation strategy, our ability to generate ideas, and the benefits of working together with the other gas networks. This expenditure covered forty-four projects in total.

Cumulatively, at the end of 2014/15, we have:

- Completed twelve projects;
- Thirty-eight 'live' projects under way;
- Won eleven awards citing innovation;
- Twenty-four proposed new projects; and
- Fifty-four new suggestions under review

The projects detailed below provide a snapshot of the types of projects we have underway.

### Acoustic Camera and Core & Vac

In 2014, we brought together acoustic leak detection equipment (used successfully in the water industry before we modified it for gas) with our existing Core & Vac minimal excavation technique to deliver some impressive results during trials carried out on 167 repair jobs:

- increased accuracy of leak reduction
- 33% reduction in the time taken to pinpoint leaks
- average repair time down from 4 days to 4 hours
- 95% of trial jobs delivered a cost saving of 12%
- the size of typical excavation decreased from 1.4 m sq to a replaceable core of between 450 and 600mm diameter

- vehicles deployed to site reduced by 50%
- use of virgin material reduced by 96%
- greatly reduced risk of cable strikes and physical impact

The trials were so resoundingly successful that in 2014/15 we have invested an initial £750,000 to introduce two units, as well as appointing a full-time Acoustic Camera Operator and Specialist Site Manager

The technology has been shared with our colleagues at National Grid and SGN. Overseas it is being adopted this year in New York, San Diego and Toronto after visitors from America came to Durham to witness it in action and in May we also showcased the kit to Melchers Oil and Gas Co in Singapore.

The technology won a 2015 IGEM award for Innovation.

In 2015/16 we are hoping to commence a project to support the development of the technology so that we can reap the same benefits and help us locate leakage in larger diameter pipes.

### Remote water removal systems

With water ingress being one of the biggest issues facing our industry, last year we registered a two-part project to look at finding workable solutions for the future. We asked for support from Synthotech – a SME that specialises in developing pipework engineering solutions for utility businesses worldwide – on the back of their success with developing a solution to a similar problem being experienced by a client in Brazil.

Stage one of the project began in 2013/14 with an initial research and planning exercise. We embarked on a scope of work with Synthotech and Macaw Engineering to help us quantify the scale of the water ingress problem in our gas mains network and identify weaknesses with our existing water management processes, including how water moves around within our network. We also laboratory tested two prototype technologies based on a CCTV Water Extraction system developed by Synthotech.

Stage two of the project, to physically test the two prototypes (one for services and one for mains), kicked off in May 2015. Both units combine a CCTV camera with an in-built water extraction device that can be operated without the need to interrupt the gas supply. The gas main camera/extraction technology not only separates gas from water, but can also inject gas back into the network, reducing environmental impact and ensuring customers aren't given cause for concern because they can smell gas. At the end of the water removal process, the camera can be used to ensure that no water is remaining or identify the point of ingress.

The service prototype is specifically designed so that one man can transport and operate it, meaning the current very complex and lengthy process can be substantially reduced – the first engineer on site will be able to do everything. The unit has been deployed to three incidents so far and early indications are that both the unit and process around its one-man operation work well with PE services, but may need modifying for steel services. Field trials will continue for the rest of 2015 so that the technology can be trialled in all seasons before a final specification and recommendation is developed.

Trials of the mains prototype commenced in January 2015 and are ongoing. The unit is being trialled in plastic, steel and cast mains and we have been successful in launching the camera unit up to 55 metres into all types of pipe. In May we were successful in extracting water up to the same distances across three different test sites and, at one site, we were able to identify the actual point of water ingress after the main body of water had been removed. Although very encouraging, the trials have also pointed to some changes that need to be made to both the system and operational procedures which will be further trialled throughout the year.

Interim outputs of the system trials indicate it will offer a 50% reduction in the time taken to extract water, the number of excavations and the manpower required to deal with issues of water ingress. NGN experiences approximately 400 water ingress events each year so, if adopted, the system has the potential to have a huge impact delivering substantial benefits to our customers.

### Intelligent CO detector

Effective CO detection and awareness is a real focus area for NGN – in 2013 we invested £1.8 million in equipping every single one of our customer facing engineers with a handheld Gascoseeker which has significantly increased the number of instances where we detect CO is present – from 86 recorded incidents in 2012 to 169 in 2013 and 194 in 2014 – potentially saving lives.

The Energy Innovation Centre approached us to see if we would be interested in taking part in a trial of an Intelligent CO detector developed by Smartco, an SME they had been approached by. Developed with vulnerable people in mind, the detector is a CO alarm meets mobile phone. As well as sounding an alarm if CO is detected or if the unit is tampered with, it also incorporates a SIM that can send a text alert to a central monitoring point – a social landlord or warden for example.

Along with two GDNs, we are installing 600 alarms nationwide as part of a year long trial. At NGN, we are working with Kirklees Neighbourhood Housing where we have installed 150 alarms and where, during the installation process, we identified CO in a resident's boiler house. As well as testing the technology, we will be sending quarterly updates out to all of those involved in the trial and we will also be gauging their awareness of CO before, during and after the trial to help inform our future education activities.

### PE riser lining projects

This suite of interlinking projects has been kicked off to clarify the processes around the use and repair of PE pipes, as well as trialling new technologies that could extend their life. When the gas industry switched to using PE risers in the 1980's there was nothing put in place to provide guidance on how permanent or interim repairs should be carried out. With the old metal pipes, there are a variety of options to assist in repairing, whereas with PE you can currently only cut out and replace the damaged area of pipe by welding in a new section. We wanted to offer the same variety of options for PE.

We are collaborating with National Grid and SGN to trial a process for different ways to repair pipe and how to test these repairs with a view to creating a definitive specification for the whole industry to use. We are working with engineering specialists Macaw to help us do this and it is hoped the end specification will be delivered in September 2015, ready for sign off by the HSE before adoption.

One option under consideration is spray lining. It is estimated that using lining technology will save 25% - 50% over the current replacement method, equating to approximately £3 to £6 million for NGN alone over a five year period. In addition to the financial benefit, this project spares the customer inconvenient disruptions and ultimately increases overall customer satisfaction.

### Acoustek

As an industry, we are continuing to push the boundaries when it comes to speeding up the process and improving the accuracy of detecting the location of leaks and blockages in our pipes to reduce risk and environmental impact and improve efficiency and customer service as a whole. Manchester University approached the Energy Innovation Centre with an idea for adapting their existing Acoustek technology, used successfully to detect blockages, leaks and lost 'PIGs' (pipeline inspection gauge) in high pressure offshore gas pipelines. All four gas distribution networks were interested in exploring its potential.

Acoustek comprises a probe and a microphone which, when inserted in to the pipe, can shoot a sound wave up to 500m in either direction. If the sound wave encounters a leak, blockage (and potentially water ingress), it will bounce back to the probe where the resulting sound graph provides a precise indication of the location of the anomaly. A huge advantage of this technology is its range – 1km of pipe can be surveyed on the back of just one excavation, whereas existing camera technology can only survey around 100 meters at a time resulting in ten times the number of excavations.

We are collaboratively involved in a trial which has seen Manchester University gain some impressive results in lab tests and work with pipeline technology experts Synthotech to develop a bespoke device for carrying out field trials, which will be ongoing UK wide over the rest of 2015. HSE approval for the technology will be sought before individual GDNs prepare their own business cases for its adoption.

### Stub end abandonment developments

By 2032, GDNs are required by the HSE to fully abandon less than 8 inch iron pipes within 30m of a building. Where a pipe joins on to a parent main by means of a 'T' section this can be very difficult to do. Existing techniques mean that the GDNs have to leave a 'stub' (often up to a metre) of live pipe adjoining the 'T' section or cut a section of the parent main out by costly and complex operations. The practice of leaving a short stub does not comply with HSE requirements, and, as an industry, we could be left with potentially thousands of stub ends that need to be removed at some point in the future. The potential impact on the customer, the environment and the efficiency of our individual businesses is huge.

We are working with Steve Vick International (SVI), to develop a remote technology that allows us to abandon the whole pipe without leaving a stub end, meaning we do not have to go back and cause more disruption by removing these in the future. We have developed a trial technology based on the existing methodology, which has been tested extensively in a laboratory setting during 2014. We then commenced field trials in January 2015 where we worked in an unpopulated brownfield site in Middlesbrough to abandon pipes, before cutting them out to test whether there had been any leakage.

The January trials were a resounding success, so we have broadened the trial to 17 more locations across the NGN network. The data gathered from this will be developed into a business case during Q3 2015 and we are already confident of this being accepted by the business.

During one trial we have successfully abandoned a tier one main from a footpath with minimal impact on road users and pedestrians, where using the traditional method of cutting a section of the parent out would have meant weeks of major traffic management on a major road in North Shields. On another trial in the congested town centre of Beverley, East Yorkshire during May 2015 we completed a job in a day with minimal digging avoiding blocking the entrances to shops.

### T-Shale: Part 1 and part 2

NGN is looking at the possibilities and challenges around the development of the shale gas industry in the UK, as demonstrated through two projects currently ongoing under the NIA.

T-Shale 1 – Scoping

In March 2015, representatives from NGN were joined by colleagues from National Grid on a fact finding trip to the US, organised by UKTI and facilitated by the British Consulate, where we met with US gas transportation operators to gain a better understanding of the steps needed to accommodate the potential onset of shale gas development in the UK. A summary of the learning from this trip will be included in our next NIA progress report and we are also planning to develop a presentation of these outputs to share across the industry.

T-Shale 2 – Flow maintenance

There are a number of questions around how the existing gas distribution infrastructure will be able to accommodate lots of smaller entry points for new unconventional sources of gas (biomethane and shale gas for example) directly into the distribution network rather than current offtakes from the National Transmission System (NTS). Another big question is: how will developers know there will be enough demand year round for the gas they produce?

We are kicking off a project to install meters at strategic points around our network so that we can monitor seasonal flow rates over a two-year period to enable us to build a more accurate picture.

We will then look to work collaboratively with our GDN colleagues to install test meters UK wide for a two-year monitoring project to take place over 2016 and 2017, before working together to analyse the findings so that we can more clearly quantify the opportunity for producers.

## 4.3 Network Innovation Competition (NIC)

Our aim is to submit at least one NIC project for assessment in every year of RIIO. In order to achieve this we have developed a structured multi stage approach to developing NIC projects. We have established several target areas to generate and assess project ideas, and then use the NIA in order to further develop appropriate projects. We are also working in collaboration with Wales and West Utilities and the Energy Innovation Centre to maximise idea generation and increase the chances of a successful outcome.

We were delighted to be successful with our first bid under NIC being awarded funding of £4.9m for low carbon pre-heating.

### 4.3.1 Low carbon gas preheating project overview

The transition to a low carbon energy sector in the UK presents GDNs with a number of challenges, including reducing the business carbon footprint (BCF) of operating gas networks. The requirement for GDNs to preheat gas at pressure reduction stations (PRS) to avoid freezing the outlet pipework and ensure continuity of supply is a significant contributor to our BCF. GDN's preheating requirement is currently delivered using ageing water bath heaters (WBH) or more modern boiler package technologies.

There are several key issues GDNs currently face when appraising investment options for preheating technology. Firstly, the whole life costs and in particular the carbon impact of currently available technologies is not understood. Secondly, there has been limited research or development in this area resulting in no financially viable alternative to existing technologies.

The low carbon gas preheating (LCGP) project seeks to address these issues directly. The project will install two 'alternative' preheating technologies across six NGN sites of differing scale - three Thermo Catalytic Systems (HotCat) and three Low Pressure Steam Systems (LP Steam). Smart metering technology will be installed on each of the six sites to provide data required to calculate and publish the system efficiency of each site and each technology. Additionally, smart metering technology will be installed separately on six sites that employ existing technologies. System efficiencies will be calculated and published for direct comparison.

The project has been progressing well and we now expect to have all equipment delivered and all remaining installation works completed by December 2015. The current financial forecast shows the project will be delivered slightly under budget.

Currently eight of the twelve sites are sending live data back to the website – this includes all of the Boilerhouse and Water Bath Heater sites. The website itself is now live and accessible to all. Users can compare the efficiency of the sites reporting into it, and can download all data collected to carry out their own data analysis. The website can be viewed by clicking the 'Low Carbon Gas Preheating (LCGP) Project' title at:

http://corporate.northerngasnetworks.co.uk/innovation/

### 4.3.2 2015 NIC bid – City wide Compressed Natural Gas (CNG) fuelling station

Our 2015 NIC bid focusses on the implementation of a CNG fuelling station in Leeds. Using CNG to fuel transport in the city will support emissions reductions and deliver associated air quality improvements, as well as reduce costs.

There are currently several small CNG fuelling stations around the UK which serve specific limited customer bases. These existing stations are predominantly for the use of long distance HGV type vehicles and small bus fleets. Currently there are no fuelling stations in the UK of the size which would facilitate the large scale conversion of vehicles to CNG. These vehicles could include any depot based vehicles, for example garbage trucks, buses, local taxis, and fleet vans such as those operated by NGN.

The most significant obstacle to accelerating the step change towards CNG vehicles is the lack of a proven economic business case to build such a fuelling station. Our NIC project will provide this business case as a UK proof of concept, which will accelerate private sector investment and growth in the CNG market. The upfront cost of the high pressure connection will be funded via the NIC and paid back as the station becomes economically viable, with the level of repayment linked to throughput. This means that the overall cost of the fuelling station should be zero to UK gas customers.

The key objectives of the NIC project are:

- It will act as a 'build it and they will come' proof of concept for UK cities with the ambition of establishing a large scale city based CNG station;
- It will explore novel commercial arrangements for incentivised upfront investment in high risk / proof of concept projects; and
- It will identify appropriate technical complexities for the sizing, design and build of HP connections associated with this type of infrastructure.

## 4.4 Innovation Roll-out Mechanism

We currently have no projects which would qualify for funding under the Innovation Roll-out Mechanism.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# Cost efficiency

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# 5 Cost Efficiency

This section considers;

- Our overall performance against the Totex allowance and incentive mechanism;
- Detailed analysis of our performance against our Operating, Capital and Replacement costs allowances;
- The uncertainties mechanism within the RIIO-GD1 price control; and
- The impact of real price effects and operational changes on our performance, and our approach to benchmarking.

When analysing our costs we consider both the performance in 2014/15 and cumulatively since RIIO-GD1 began. We also provide forecasts for the remainder of the price control period, and explain variances from the previous year's forecasts.

## 5.1 Totex performance

Under the RIIO price control methodology we have been set cost allowances to enable us to deliver our outputs and associated secondary deliverables. These allowances are broken down into Opex, Capex, and Repex, and then by activity below this. We have also been set an efficiency incentive rate which determines the proportion of any under or over spend which is shared with customers.

The efficiency incentive rate is now the same for all expenditure areas, which are collectively known as Totex. This means that £1 spent or saved in Opex is treated in exactly the same way as £1 spent in Capex. In previous price controls different expenditure lines had different efficiency incentives, which could create an artificial bias towards one type of expenditure.

### 5.1.1 Totex compared to the allowance

| Totex<br>14/15 prices (£m) | Allowance | 2014/15 | Variance |
|---|---|---|---|
| Controllable Opex | 99.5 | 84.2 | (15.3) |
| Capex | 56.6 | 48.6 | (8.0) |
| Repex | 100.6 | 94.5 | (6.1) |
| **Totex** | **256.7** | **227.3** | **(29.4)** |

**Figure 5.1: Totex compared to the allowance**

The table above summarises this year's performance against the Totex allowance. It is important to remember that the allowances were set by benchmarking all the gas networks. We have historically been assessed as the most efficient network, and so some of our allowances have been set at a level higher than our base costs.

Overall we outperformed the Totex allowances by £29.4m this year, compared to an outperformance last year of £36m. The main drivers for this variance in outperformance are;

- An increase in capital investment in the network as our workload plans accelerate to deliver several major projects;

- An increase in Repex mains laid over and above the assumed workload in the allowance, which is a deliberate strategy to increase future workload flexibility and deliver projects with strong payback; and
- A short term increase in our business support costs for IT and Telecoms whilst we implement our new IT strategy.

The £29.4m outperformance is shared with our customers under the Totex incentive mechanism detailed above. Full explanations of our performance are contained in the following section.

### 5.1.2 Totex forecasts

| Totex forecasts 2014/15 prices (£m) | 13/14 Actual | 14/15 Actual | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Controllable Opex | 82.2 | 84.2 | 85.0 | 83.2 | 82.0 | 80.9 | 80.4 | 79.9 | **657.9** |
| Capex | 41.0 | 48.6 | 56.9 | 51.6 | 43.0 | 43.2 | 43.8 | 42.5 | **370.6** |
| Repex | 90.0 | 94.5 | 89.0 | 84.1 | 82.0 | 81.2 | 76.8 | 76.8 | **674.4** |
| **Totex** | **213.3** | **227.2** | **230.9** | **218.9** | **207.0** | **205.3** | **201.0** | **199.2** | **1702.8** |

**Figure 5.2: Opex forecasts**

The table above summarises our forecast for Totex over the RIIO-GD1 period. Overall we expect our Totex costs to drop to just under £200m by the end of RIIO-GD1, a c13% drop from current levels. The main drivers for this are;

- Opex reducing by c£5.0m, despite an increase in holder demolitions from two this year to five in 2020/21. This suggests an underlying efficiency of nearer £7.0m, or nearly 10%;
- Capex reducing from just under £50m p.a. average in the early years of RIIO-GD1 to nearer £42m by 2020/21. We expect to increase the efficiency of delivery across all areas of Capex, and are looking to front load investment to maximise the benefits for our customers and ourselves; and
- Repex reducing from over £90m p.a. average in the early years of RIIO-GD1 to nearer £77m by 2020/21. We are currently ahead of our Tier 1 abandonment target by c50km. This is a deliberate strategy to target replacing the poorest performing mains early in the period to deliver both customer and efficiency benefits across Repex and Opex. It also provides increased flexibility in managing the workload going forward.

## 5.2 Opex Performance

We categorise Operating expenditure (Opex) depending on whether it is within our direct control or not. Non-controllable costs include such things as Ofgem's licence fee, network rates and the NTS pension deficit recharge.

Controllable Opex is split into two categories;

- Direct Opex – covering work management, emergency, repair, maintenance and other direct activities; and
- Indirect Opex – covering training and apprentices, and then business support activities, such as finance, human resources, and IT.

### 5.2.1 Controllable Opex compared to the allowance

| Controllable Opex 14/15 prices (£m) | Allowance | 2014/15 | Variance |
|---|---|---|---|
| **Direct Opex** | | | |
| Work Management | 21.2 | 15.9 | (5.4) |
| Emergency | 15.7 | 10.2 | (5.5) |
| Repair | 17.1 | 15.0 | (2.1) |
| Maintenance | 8.8 | 9.4 | 0.6 |
| Other direct activities | 12.4 | 6.9 | (5.5) |
| **Direct Opex total** | **75.2** | **57.3** | **(18.0)** |
| **Indirect Opex** | | | |
| Business Support costs | 20.2 | 24.6 | 4.4 |
| Training and Apprentices | 4.1 | 2.4 | (1.7) |
| **Indirect Opex total** | **24.3** | **27.0** | **2.6** |
| **Total controllable Opex** | **99.5** | **84.2** | **(15.3)** |

**Figure 5.3: Controllable Opex compared to the allowance**

Overall our 2014/15 controllable Opex costs were £84.2m, outperforming the allowance of £99.5m by £15.3m. This is detailed by activity in the table above.

This outperformance will be shared with our customers under the Totex sharing mechanism. It is important to remember that the allowances are benchmarked against the other GDNs, and as the frontier performer, the allowances we have been set are in some cases higher than our base costs.

## 5.2.2 Year on Year Controllable Opex performance

| Controllable Opex 14/15 prices (£m) | 2013/14 | 2014/15 | Variance |
|---|---|---|---|
| **Direct Opex** | | | |
| Work Management | 13.6 | 15.9 | 2.2 |
| Emergency | 10.0 | 10.2 | 0.2 |
| Repair | 16.7 | 15.0 | (1.7) |
| Maintenance | 8.5 | 9.4 | 0.9 |
| Other direct activities | 6.9 | 6.9 | (0.1) |
| **Direct Opex total** | **55.8** | **57.3** | **1.5** |
| **Indirect Opex** | | | |
| Business Support costs | 24.0 | 24.6 | 0.6 |
| Training and Apprentices | 2.5 | 2.4 | (0.1) |
| **Indirect Opex total** | **26.5** | **27.0** | **0.5** |
| **Total controllable Opex** | **82.2** | **84.2** | **2.0** |

**Figure 5.4: Controllable Opex year on year variance**

Overall we have seen a real cost increase of £2.0m in controllable Opex from 2013/14 to 2014/15. Direct and Indirect Opex both increased, by £1.5m and £0.5m respectively. The sections below provide a detailed analysis of this performance by activity type.

## 5.2.3 Year on Year Direct Opex performance

| Direct Opex 14/15 prices (£m) | 2013/14 | 2014/15 | Variance |
|---|---|---|---|
| Work Management | | | |
| Asset management | 2.5 | 4.1 | 1.6 |
| Operations management | 8.9 | 8.1 | (0.8) |
| Customer management | 0.6 | 2.2 | 1.6 |
| System control | 1.5 | 1.5 | (0.1) |
| Emergency | 10.0 | 10.2 | 0.2 |
| Repair | 16.7 | 15.0 | (1.7) |
| Maintenance | 8.5 | 9.4 | 0.9 |
| Other direct activities | 6.9 | 6.9 | (0.1) |
| **Total Direct Opex** | **55.8** | **57.3** | **1.5** |

**Figure 5.5: Direct Opex year on year variance**

Work management overall has seen a £2.3m year on year increase in costs across the four activities included here. This overall increase is driven by;

- An increase in asset management of £1.6m. We have demolished two gas holders this year compared to one in 2013/14, which has increased costs by £0.7m. We have also increased our expenditure related to Land Remediation by £0.5m. This work involved visiting and reassessing all sites with potential land contamination issues in order to develop a strategic plan for the control, monitoring and potential remediation of appropriate sites. The balance is then driven by variances in net staff costs and professional and consultancy costs to support our Asset Health and Total Network Management (TNM) approach to strategic asset management;
- A decrease in operations management of £0.8m. We carried out a major review to improve our work planning activities last year, which has not reoccurred. This is the main driver for a £0.4m decrease in professional and consultancy costs. The balance is driven by reduced costs for ordnance survey mapping used in digitisation (£0.2m), and reduced costs associated with survey work and sample inspections by local highway authorities (£0.2m), which both vary year on year; and
- An increase in customer management of £1.6m. In 2013/14 we received a one off contractual rebate payment from National Grid for call handling services which were paid for in previous years. This will not reoccur and so we have seen an increase in our costs back to expected levels.

Emergency and repair costs have shown a combined decrease of £1.5m, whilst achieving a very strong performance in our emergency and repair outputs. We have achieved;

- A greater than 99.9% performance for attending both controlled and uncontrolled gas escapes within 1 and 2 hours respectively, against a target of 97%;
- An annual repair risk score of 24.8 million against a target of less than 34.5 million; and
- 62.9% of repairs completed within 12 hours, against a target of 60.25%.

As part of our Repex programme we have consistently targeted replacing some of our poorest performing pipes, which will be a key driver for improving our emergency and repair performance over RIIO-GD1. This year we have also experienced a consistently mild winter which has impacted workload and hence performance, overtime payments and contractor costs. In terms of workload, the number of public reported escapes dropped from 89,290 last year to 83,446 in 2014/15. This also resulted in a decrease in repairs from 25,526 last year to 22,377 in 2014/15.

We have also taken significant steps to improve our efficiency and delivery in the emergency and repair activities over the last 18 to 24 months, and have felt a full year's benefit in 2014/15. These include;

- The introduction of new terms and conditions for upskilled employees, as well as new starters. This includes the introduction of 'site start' and 'site finish' working patterns, as well as new bonus arrangements, which are now specifically linked to outputs;
- Revised contractual arrangements and focused management of street works and reinstatement to improve response times and efficiency;
- The targeted upskilling of first line managers, including support towards Institute of Leadership and Management accreditation. We have also introduced a regional coaching structure to support this;
- The introduction of new vehicle telemetry (Green Road) to improve driving behaviour, impacting safety and efficiency; and
- The introduction of a centralised plant 'desk' to manage all aspects of plant usage.

This year we have seen the following impacts in particular;

- Our emergency costs saw a marginal increase of £0.2m from 2013/14. The main driver for this was the recruitment of internal Rapid Response Engineers to replace external contractors to further improve our winter resilience plans; and

- Our repair costs saw a £1.7m reduction from 2013/14. We saw a £0.7m decrease in the use of contractors due to the consistently mild winter, a £0.2m decrease in vehicle maintenance costs, linked to our use of Green Road to improve driving techniques, with the balance of £0.7m driven by increased efficiency and reduced costs as proportionally more employees are now on new terms and conditions.

Maintenance costs have increased by £0.9m, mainly as a result of increased risk assessment based maintenance work associated with Pressure Reduction Stations and Offtakes. As the work is driven by risk assessments and actual performance it can vary materially from year to year. We have also seen a marginally increased net cost of service alteration work, due to workload mix.

Other direct activities has decreased by £0.1m. Within this activity we saw a £0.5m decrease in costs for Interruptible contracts, as one contract ended with Iggesund. This was partially offset by a £0.4m increase in xoserve charges.

### 5.2.4 Year on Year Indirect Opex performance

| Indirect Opex 14/15 prices (£m) | 2013/14 | 2014/15 | Variance |
|---|---|---|---|
| Business Support | | | |
| IT and telecoms | 10.7 | 11.0 | 0.3 |
| Property management | 1.1 | 1.6 | 0.5 |
| Human resources | 0.7 | 0.8 | 0.1 |
| Audit, finance and regulation | 3.8 | 3.6 | (0.2) |
| Insurance | 3.5 | 3.3 | (0.2) |
| Procurement | 0.2 | 0.2 | 0.0 |
| CEO and group management | 4.0 | 4.1 | 0.1 |
| Training and apprentices | 2.5 | 2.4 | (0.1) |
| **Indirect Opex total** | **26.5** | **27.0** | **0.5** |

**Figure 5.6: Indirect Opex year on year variance**

Indirect Opex overall has seen a £0.5m year on year increase in costs across business support and training and apprentices. This overall increase is driven by;

- A £0.3m increase in IT and telecoms expenditure. Further details on our IT and telecoms strategy and the current drivers for our costs in 2014/15 are provided below;
- A £0.5m increase in property management expenditure. In 2013/14 we received a one off contractual rebate for facilities management services of £0.7m. This will not reoccur and so we have seen costs increase back albeit to new lower levels; and
- A £0.1m increase in CEO and group management costs, primarily as a result of increased expenditure on business communications, corporate social responsibility and stakeholder management - all of which have been made a priority focus for NGN as a key employer and influencer in the North of England. We have expanded our internal resources in this area to maximise our opportunity to make a positive contribution.

## IT and Telecoms

In 2014 we appointed a new Director of Innovation, Improvement and Information (3iG). This new role was created with the aim of changing NGN's traditional IT function into a **high performance business change function** with the following three objectives;

- Improve our business efficiency and effectiveness;
- Improve customer and stakeholder experience; and
- Help to accelerate the delivery of good ideas.

Delivering on these objectives will enable us to reduce our overall IT operating costs through the utilisation of new technologies, replacing our existing outsourced contracts, removing cost duplications and building on the environmental benefits associated with adopting more modern technology.

### Changes to the delivery of IT services

In 2014 we have made three major changes to the way that IT services operate in NGN;

- We brought knowledge and expertise in house, resulting in the insourcing of our IT service desk from suppliers to be managed and operated by NGN staff. We have also moved key decision making roles in house to ensure decisions are made by NGN staff in areas such as Applications and Technical Architecture, and Information Security;
- We changed how projects are delivered. We have developed and adopted a new project delivery (Accelerated Delivery) approach which aims to make best use of techniques such as Agile and Kanban alongside more traditional project management techniques; and
- We have moved to a digital business strategy as opposed to an old style IT strategy, where the adoption of new technologies such as Cloud, Mobile, and data analytics enable radical improvement in NGN's ways of working.

### Changes to commercial and contracting approach

The majority of NGN's IT operating expenditure is through three fixed price IT support contracts. These contracts evolved over time as we first exited the Front Office (FOMSA) agreements, then the System Control (SOMSA) agreements, and then insourced our field operations from United Utilities.

In 2014 we planned a series of tender events to replace and simplify these contracts as they contain some duplication of services and support areas. This had resulted in a highly complex and geographically dispersed IT Datacentre estate.

However the changes in management and strategy detailed above led to the cancellation of these procurement events. We have now redeveloped the scope of requirements to better align to the new 3iG strategy, and intend to make greater use of cloud services, with the intention of realising improved service and greater operating cost reductions over time.

### Objectives for 2015 – The 'Protect' programme

We are now planning on awarding new service contracts in the summer of 2015. In parallel with this, further work will be progressed to review software licences to target reductions in the overall costs in these areas.

This work programme is referred to as the 'Protect' programme with the objective to reduce the IT operating costs by £2-3m million per year over the next two years. In conjunction with this our internal consulting capability will continue to explore smarter ways of working, exploiting new technologies and data analytics.

### Objectives beyond 2015 – The 'Modernise' programme

After the completion of the 'Protect' programme in 2015, further work will be undertaken to review the application estate used in NGN, with all major application platforms being the subject of commercial tender events and

detailed architectural review. This will include the work and asset management systems (SAP, Ventyx Service Suite and ESRI GIS) and the System Control (DNCS) suite of systems.

The objective of this work will be to utilise more modern technology platforms, make use of open source software to reduce licence costs, and to further utilise the benefits of cloud and mobile technologies for cost reduction, environmental benefits and work force flexibility.

The objective of this work is to significantly reduce the overall IT operating costs by the end of 2017, whilst improving services across all activities.

### 5.2.5 Year on Year Non Controllable Opex performance

| Non Controllable Opex 14/15 prices (£m) | 2013/14 | 2014/15 | Variance |
|---|---|---|---|
| Ofgem licence | 1.5 | 1.6 | 0.1 |
| Network rates | 36.0 | 36.2 | 0.1 |
| NTS exit costs | 6.8 | 8.7 | 1.9 |
| Shrinkage | 8.8 | 6.3 | (2.5) |
| Pension scheme administration costs | 0.0 | 0.0 | 0.0 |
| Established pension deficit recovery plan payment | 8.0 | 8.0 | 0.1 |
| PPF levy costs | 0.1 | 0.1 | 0.0 |
| NTS pension recharge | 4.9 | 4.9 | 0.1 |
| Network innovation (excl. IRM) | 1.4 | 2.4 | 1.0 |
| Innovation roll-out expenditure (IRM) | 0.0 | 0.0 | 0.0 |
| Bad debt | (0.1) | 0.0 | 0.1 |
| **Non Controllable Opex total** | **67.3** | **68.1** | **0.8** |

**Figure 5.7: Non Controllable Opex year on year variance**

Overall non-controllable Opex costs have increased by £0.8m in real terms. The key variances are;

- An increase in NTS exit costs, driven by an increase in NTS prices from National Grid, which has been somewhat offset by our reduced bookings;
- A decrease in gas shrinkage costs due to reduced gas prices and our improvement in leakage performance; and
- An increase in Network Innovation costs, due to increased delivery of projects in this area. Please see section 4 for further details.

## 5.2.6 Opex cumulative position under RIIO

| Opex forecasts 2014/15 prices (£m) | 13/14 | 14/15 | Cumulative Total | Cumulative Allowance | Variance |
|---|---|---|---|---|---|
| Work management | 13.6 | 15.9 | 29.5 | 42.5 | **(13.1)** |
| Emergency | 10.0 | 10.2 | 20.2 | 31.5 | **(11.3)** |
| Repair | 16.7 | 15.0 | 31.7 | 34.5 | **(2.8)** |
| Maintenance | 8.5 | 9.4 | 17.9 | 17.6 | **0.2** |
| Other direct activities | 6.9 | 6.9 | 13.8 | 24.1 | **(10.3)** |
| **Total direct opex** | **55.8** | **57.3** | **113.0** | **150.2** | **(37.2)** |
| Business support | 24.0 | 24.6 | 48.6 | 40.2 | **8.3** |
| Training/apprentices | 2.5 | 2.4 | 4.9 | 7.6 | **(2.7)** |
| **Total indirect opex** | **26.5** | **27.0** | **53.4** | **47.8** | **5.6** |
| **Total controllable opex** | **82.2** | **84.2** | **166.4** | **198.0** | **(31.6)** |

**Figure 5.8: Opex forecasts**

Cumulatively we have outperformed the controllable Opex allowance of £198.0m by £31.6m (16%). It is important to remember that the allowances were benchmarked against the other GDNs, and as the frontier performer the allowances we have been set are in some cases higher than our base costs.

Direct Opex shows a £37.2m outperformance, which is offset by a £5.6m underperformance in Indirect Opex.

## 5.2.7 Opex forecasts

| Opex forecasts 14/15 prices (£m) | 14/15 forecast | 14/15 actuals | Variance |
|---|---|---|---|
| Work management | 16.2 | 15.9 | **(0.4)** |
| Emergency | 9.0 | 10.2 | **1.2** |
| Repair | 17.3 | 15.0 | **(2.4)** |
| Maintenance | 8.5 | 9.4 | **0.9** |
| Other direct activities | 6.6 | 6.9 | **0.2** |
| **Total direct opex** | **57.6** | **57.3** | **(0.3)** |
| Business support | 22.8 | 24.6 | **1.7** |
| Training/apprentices | 3.0 | 2.4 | **(0.6)** |
| **Total indirect opex** | **25.8** | **27.0** | **1.2** |
| **Total controllable opex** | **83.4** | **84.2** | **0.8** |

**Figure 5.9: Opex forecasts**

In our 2013/14 submission we forecast that our 2014/15 controllable Opex would be £83.4m. Our outturn costs have been £0.8m higher at £84.2m. The table above provides details of the variances by activity. The main drivers for this variance are;

- A combined decrease in Emergency and Repair costs of £1.2m driven by the consistent and very mild winter experienced, increased number of employees on new terms and conditions, and updates to our winter resilience plans;
- Variances in reactive maintenance work, specifically for PRS system and regulator costs;
- Changes to the timing of our revised IT strategy, which has delayed cost savings whilst we further develop our long term strategy to maximise future benefits. This is the main driver for the variance in Business Support costs; and
- Changes to our approach to recruiting and training apprentices. This year we have implemented a new approach which involves supporting our direct contractor network to recruit and train apprentices directly themselves. We provide full support in ensuring they have access to appropriate funding, providing mentoring services, and support in dealing with local colleges.

## RIIO-GD1 forecast

| Opex forecasts 2014/15 prices (£m) | 13/14 Actual | 14/15 Actual | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Work management | 13.6 | 15.9 | 15.9 | 16.5 | 16.3 | 16.1 | 16.5 | 16.9 | **127.7** |
| Emergency | 10.0 | 10.2 | 11.0 | 10.8 | 10.6 | 10.4 | 10.2 | 10.0 | **83.2** |
| Repair | 16.7 | 15.0 | 16.3 | 16.0 | 15.7 | 15.5 | 15.3 | 15.1 | **125.5** |
| Maintenance | 8.5 | 9.4 | 8.9 | 8.8 | 8.7 | 8.6 | 8.5 | 8.4 | **69.8** |
| SIUs | - | - | - | - | - | - | - | - | **-** |
| Other direct activities | 6.9 | 6.9 | 6.8 | 6.8 | 6.7 | 6.7 | 6.6 | 6.6 | **53.9** |
| Of which Xoserve | 3.9 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | **33.8** |
| **Total direct opex** | **55.8** | **57.3** | **58.9** | **58.9** | **58.0** | **57.2** | **57.1** | **57.0** | **460.1** |
| Business support | 24.0 | 24.6 | 23.7 | 22.0 | 21.6 | 21.3 | 20.9 | 20.6 | **178.5** |
| Training/apprentices | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | **19.3** |
| **Total indirect opex** | **26.5** | **27.0** | **26.1** | **24.4** | **24.0** | **23.7** | **23.3** | **23.0** | **197.8** |
| **Total controllable opex** | **82.2** | **84.2** | **85.0** | **83.2** | **82.0** | **80.9** | **80.4** | **79.9** | **657.9** |
| Licence/network/other | 46.9 | 48.2 | 49.5 | 49.2 | 49.1 | 46.6 | 46.5 | 46.5 | **382.7** |
| NTS exit costs | 6.8 | 8.7 | 7.4 | 7.7 | 10.9 | 10.4 | 10.1 | 9.8 | **71.8** |
| Shrinkage | 8.8 | 6.3 | 5.9 | 5.7 | 5.5 | 5.4 | 5.3 | 4.7 | **47.5** |
| NTS pensions contribution | 4.9 | 4.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | **51.0** |
| **Total non-controllable** | **67.3** | **68.1** | **69.7** | **69.5** | **72.4** | **69.3** | **68.8** | **67.9** | **553.0** |

**Figure 5.10: Opex forecasts**

We have consistently been a frontier performer for operating expenditure and expect to maintain this position throughout RIIO-GD1. The table above summarises our forecasts for both controllable and non-controllable opex.

Work management includes our profile for holder demolition, from two holders this year up to five in 2020/21. This is the main driver for the overall cost increase in this activity, but is offset by £0.8m of expected real efficiency savings we are targeting to deliver by 2020/21.

Our emergency and repair forecasts are based on a more prudent 'normal' winter workload than has been experienced in the last two years. We would expect to outturn lower than this when the winter weather is mild. We expect to deliver net efficiency savings of £2.2m by 2020/21.

Within business support we are forecasting c£3.0m of efficiency savings across the various activities, primarily through the investment in our IT and Telecoms function detailed in section 5.2.4 above.

Training and apprentices expenditure follows our expected recruitment plans and demonstrates our commitment to reinvigorating our workforce and investing for the future. We are also supporting our contractor base with their recruitment and training activities, which in some places negates the need for us to recruit direct.

In terms of non-controllable expenditure;

- The variances in Licence/network/other are driven by movements in our pensions deficit recovery payments;
- NTS exit costs vary primarily due to price fluctuations offset by our reduced bookings;
- Shrinkage costs reduce based on our reducing forecasts for gas shrinkage volumes, and forecast gas prices; and
- NTS pension contributions are based on the latest forecasts from the NTS.

# 5.3 Capex Performance

Capital expenditure (Capex) covers a wide range of investments in both network and non-network assets. This investment is key in delivering many of our outputs, in particular those associated with asset health, asset utilisation, fuel poor and connections.

Throughout 2014/15 we have continued to improve the investment decision making process behind our capital programme, as well as the way we work together in order to deliver it. Each asset class now has an Investment Lead, and where appropriate this is a full time rather than a part time responsibility within another role. Investment Leads are entirely accountable for the 3-5 year investment plan associated with a particular asset class/classes. They lead a multi skilled investment team of colleagues containing the following:

- Asset Integrity – provide expertise regarding asset risk, performance and compliance with legislation and technical standards. They also sign off designs and commission assets;
- Major Projects & Maintenance – provide expertise including design management, project management, procurement, commercial and risk management throughout the project delivery cycle; and
- Finance, property and system operations – who all play a key role in enabling the delivery of the capital programme.

To improve ways of working together further, Major Projects, Asset integrity and Investment Planning hold a weekly 'surgery' to troubleshoot live projects. Alongside this there is a monthly Capex forum to discuss investment decisions, long term resource plans, delivery risk and financial performance.

## 5.3.1 Capex compared to the allowance

| Capital expenditure 14/15 prices (£m) | Allowance | 2014/15 | Variance |
|---|---|---|---|
| LTS, storage and entry | 13.3 | 15.0 | 1.7 |
| Connections | 6.3 | 6.8 | 0.6 |
| Mains Reinforcement | 5.0 | 1.8 | (3.2) |
| Governors (Replacement) | 1.6 | 1.4 | (0.2) |
| Other Capex | 30.4 | 23.6 | (6.7) |
| *Of which IS and telecoms* | 5.4 | 4.9 | (0.5) |
| *Of which vehicles* | 5.3 | 4.5 | (0.8) |
| **Capex total** | **56.6** | **48.6** | **(8.0)** |

**Figure 5.11: Capex variance to the allowance**

The table above summarises our actual capital expenditure in 2014/15 against the allowances by activity type. Overall we have achieved a saving against the allowance of £8.0m. This saving will be shared with our customers under the Totex incentive sharing mechanism.

## 5.3.2 LTS, storage and entry

| LTS, storage and entry 14/15 prices (£m) | Allowance | 2014/15 | Variance |
|---|---|---|---|
| LTS pipelines | | 3.1 | |
| LTS diversions | | 0.1 | |
| NTS offtakes | | 7.3 | |
| Gas entry points | | 0.0 | |
| PRSs | | 4.4 | |
| Storage | | 0.0 | |
| **Total** | **13.3** | **15.0** | **1.7** |

**Figure 5.12: LTS, storage and entry variance to the allowance**

The table above summarises our actual capital expenditure for LTS, storage and entry against the 2014/15 allowance. Overall we have invested c£15.0m in these areas against an allowance of c£13.3m, an overspend of c£1.7m. This reflects an acceleration in delivery of workload compared to last year, where we underspent by c£3.3m against the allowance. Last year we carried out a significant proportion of planning and detailed design work for many long lead time projects which have now begun construction.

Our expenditure on **LTS pipelines** has primarily been in two major areas;

- £0.8m on grouting ten vacant sleeves, part of a larger scheme to grout the majority of vacant sleeves over RIIO-GD1. Sleeves are prioritised on a risk basis. The work involves excavations to reveal the sleeves, ensuring the ends of the sleeve are correctly sealed and then pumping grout into the vacant sleeve before backfilling. This extends the life of the carrier pipe by removing a potentially corrosive environment inside the sleeve. It also improves the cathodic protection along the section of carrier pipe. An innovative guided wave technology for pipeline/sleeve inspection was successfully used to support this project.

- £0.9m on upgrading twenty four overcrossings, which deteriorate over time due to weather erosion and flooding events. Overcrossings are prioritised on a risk basis. This investment upgrades the overcrossing support mechanics, coating and wrapping, protection from flooding, as well as security and prevention of access by the public. We have also carried out a detailed overcrossings survey in order to develop long term plans to avoid any potential work delays due to access restrictions from Network Rail etc.

**NTS Offtakes** and **Pressure Reduction Stations's** are both critical assets within the gas network. When making investment decisions on these assets we need to ensure that they both have the required **capacity** to ensure we can meet our 1 in 20 supply obligations, and are in a suitable operational **condition** to deliver that capacity. In 2014/15 NGN invested in the following sites, either in terms of design or procurement and build;

- Offtakes
  - c£3.0m Wetheral
  - c£1.1m Asselby
  - c£1.0m Corbridge and Ganstead
  - c£0.4m Bishop Auckland
  - c£0.3m Cowpen Bewley and Elton
- PRS
  - c£1.0m Low Moor, Thornaby Vale and Tanfield
  - c£0.6m Knottingley and Carcroft
  - c£0.5m Warden Law

In terms of **capacity**, where a site is expected to exceed 100% Capacity Utilisation, it is progressed as a project for further investigation and potential upgrade through the capital investment programme.

The asset **condition** is determined using existing asset health data, including site condition information, fault history, and operating costs. This information is combined with recent known operational conditions and a site investment appraisal visit to capture actual condition and to prioritise the site for investment against other NGN installations.

Investment proposals can range from targeting specific pieces of gas delivery equipment e.g. Asselby, where we upgraded the mechanical apparatus on site, through to a full site rebuild including all equipment and civils work e.g. Wetheral.

### 5.3.3 Connections

| Connections | 2013/14 | 2014/15 | Variance |
|---|---|---|---|
| **Workload** | | | |
| Mains (km) | 19.1 | 27.9 | 8.9 |
| Services (number) | 6,310 | 6,866 | 556 |
| Governors (number) | 1 | 1 | 0 |
| Risers (number) | 25 | 32 | 7 |
| **Costs (14/15 prices £m)** | | | |
| Mains | 2.1 | 2.4 | 0.3 |
| Services | 9.0 | 9.7 | 0.7 |
| Governors | 0.0 | 0.0 | 0.0 |
| Risers | 0.1 | 0.0 | 0.0 |
| **Gross Cost** | **11.2** | **12.1** | **0.9** |
| Contribution | 4.7 | 5.3 | 0.6 |
| **Net Cost** | **6.5** | **6.8** | **0.3** |
| **Net Allowance** | **6.2** | **6.3** | **0.1** |

**Figure 5.13: Connections workload and costs variance**

The table above summarises our connections performance against the 2014/15 allowance, and against our 2013/14 outturn. Overall this year we have spent a net £6.8m, £0.5m over the allowance of £6.3m. Our net costs have increased by £0.3m compared to 2013/14, which is mainly due to an increase in overall workload, offset by a higher proportional increase in non-domestic work which has the highest recovery rate.

Compared to 2013/14 we have laid an extra 8.9km of main, an increase of 46%. However we only saw a cost increase of £0.3m, as a result of our mains unit cost decreasing by 22%. One of the main drivers for this was a near 50% year on year reduction in the mains unit rate for Fuel Poor connections. This was mainly as a result of the 2013/14 Little London project in Leeds which saw engineering difficulties and a very high unit rate.

Compared to 2013/14 we have completed 6,866 services, an increase of 9%. We also saw a gross cost increase of 9% (£0.8m), meaning our unit rates were broadly flat.

Overall we have seen an improvement in our gross cost rates whilst also improving our overall recovery rate, so our net unit costs have improved. We have achieved this whilst improving our customer satisfaction scores further, from 8.6 to 9.0. Please see section 2.4.4 for further details.

## 5.3.4 Mains Reinforcement

| Mains reinforcement | Allowance | 2014/15 | Variance |
|---|---|---|---|
| **Workload** | | | |
| Mains < 180mm (km) | | 3.3 | |
| Mains > 180mm (km) | | 2.5 | |
| **Total** | **18.3** | **5.8** | **(12.6)** |
| Governors (number) | 8 | 3 | (5.0) |
| **Costs (14/15 prices £m)** | | | |
| Mains < 180mm (km) | | 1.0 | |
| Mains > 180mm (km) | | 0.8 | |
| Governors (number) | | 0.0 | |
| **Total** | **5.0** | **1.8** | **(3.2)** |

**Figure 5.14: Mains reinforcement workload and costs variance**

The table above summarises our actual mains reinforcement expenditure against the 2014/15 allowance. We invested £1.8m on mains reinforcement and associated governors, delivering 5.8km of reinforcement mains and 3 governors. This equates to a unit cost of c£327 per meter, which is in line with the equivalent rate in 2013/14. It is important to remember that unit costs will vary dependent on the type, length, location and complexity of the projects undertaken.

This is a significant outperformance against the £5.0m allowance to deliver 18.3km of reinforcement main, mainly driven by workload being nearly 70% below that contained in the allowance.

Our new pressure management function has taken the lead in managing the drivers for potential reinforcement. The section was set up to address capacity constraints on the network without necessarily laying new pipe where there is a more cost effective solution. This has been a driver of increased average system pressures in RIIO-GD1 so far, with a corresponding reduction in environmental emissions incentive payments.

The other driver for reduced reinforcement workload is reduced demand on the gas network. We are required to design and manage the gas network to meet 1 in 20 peak demand requirements, which is the level of demand that would be exceeded in 1 out of 20 winters. Peak demands have fallen below those levels forecast in the four year period since the submission of the RIIO-GD1 business plan, and subsequent setting of the allowances. This has been driven by a slower than expected economic recovery in the North of England and increases in energy prices.

This affects both general and specific reinforcement;

- General reinforcement usually occurs as a result of our network validation process, where we model forward-looking demand against each network to ensure we can meet our 1 in 20 peak demand requirements. The lower peak demand requirements have meant much of our forecast work in the business plan has not been required to date.

- Specific reinforcement usually occurs as a result of customer requests for new connections, requiring specific investment to supply a new load or increased load to an existing supply. The depressed economic environment has directly impacted new connections-driven work, in particular for new housing developments. Many Local Authority economic development plans have also been reduced.

### 5.3.5 Governor replacement

| Governor replacement | Allowance | 2014/15 | Variance |
|---|---|---|---|
| **Workload** | | | |
| District Governors | | 8 | |
| Service Governors | | 1 | |
| **Total** | **30** | **9** | **(21)** |
| **Costs (14/15 prices £m)** | | | |
| District Governors | | 1.4 | |
| Service Governors | | 0.0 | |
| **Total** | **1.6** | **1.4** | **(0.2)** |

**Figure 5.15: Governor replacement workload and costs variance**

We have invested £1.4m in our overall governor replacement programme in 2014/15, which is a two year programme to replace or refurbish ERS modules as well as both district and service governors.

This year we have focussed on the design of the projects and the bulk procurement of materials, meaning our actual delivery workload has been low, only focussing on priority work. The majority of the physical delivery will take place in 2015/16. Over half of the expenditure this year has been on materials, with the balance on design works and delivery.

We have prioritised sites based on maintenance frequencies, capacity, physical condition of the unit and the locality using the local knowledge and hands on experience of field staff. We are due to replace all ERS modules as they are now obsolete with low availability of spare parts.

## 5.3.6 Other Capex

| Other Capex 14/15 prices (£m) | Allowance | 2014/15 | Variance |
|---|---|---|---|
| System Operations | - | 3.3 | - |
| Infrastructure and Systems | *5.4* | 4.9 | (0.6) |
| Xoserve | - | 1.5 | - |
| Plant, tools and equipment | - | 5.9 | - |
| Land, buildings, furniture and fittings | - | 1.2 | - |
| Vehicles | *5.3* | 4.5 | (0.9) |
| Security (Exc PSUP) | - | 0.3 | - |
| PSUP | - | 0.0 | - |
| Other | - | 1.9 | - |
| **Capex total** | **30.4** | **23.6** | **(6.7)** |

**Figure 5.16: Other Capex variance to the allowance**

The table above summarises our actual Other Capex expenditure against the 2014/15 allowances. We have invested £23.6m in the areas detailed in the table, against an allowance of £30.4m.

The £3.3m expenditure spent on **System Operations** included the following;

- **£0.5m system control changes phase 1.** This project aims to improve the performance of both our control and data management systems used to capture information shared with the other gas industry participants. It also aligns the functionality of the system to changes in UNC, and enhances the network alarm management system.
- **£0.8m gas day changes.** This project is compliance driven, responding to changes in both the European BAL and CAM codes. These were agreed by DECC and drove changes to the Thermal Energy Regulations (1996) and UNC. Detailed analysis of the UNC identified a significant number of compliance impacts on our control and data management system.
- **£1.4m communications and outstations replacement.** This project is to replace our obsolete hilltop communications outstations, increasing efficiency in data capture and protecting security of supply.
- **£0.5m replacement data loggers.** Data loggers are on gas consumers meters and are used by shippers for demand estimation. This project was to replace obsolete equipment.

The £4.9m expenditure on **Infrastructure and Systems** focussed in three key areas, improving the systems that we operate, and replacing legacy hardware and networking equipment. The system enhancements worked on include;

- **Mobile Applications**. This projects aim was to replace paper forms with smart phone mobile applications, improving the accuracy of data, reducing the amount of paper forms that required completion and the time operational staff have to return to the depots.
- **Ventyx and GIS**. This project included improvements to enhance the usability of the systems, simplify data capture and introduce greater data validation. These changes have resulted in an 88% reduction in system near misses captured. We also introduced a mobile application to allow asset data to be captured in the field electronically. These changes will also give improved mobile access to NGN's mapped asset details held in the GIS system.

- **Working Time Solutions**. This is a workforce-planning tool which is being introduced to help to optimise the scheduling of work and shift patterns across our Emergency and Repair processes.

The Infrastructure and Networking improvements worked on include;

- **Wide format printing.** This involved the replacement of legacy plotters and scanners with modern 'follow me' printers that reduce overall print costs, increase document security and simplify printer support under a single contract.
- **Desktop and laptop replacement and end user device upgrade.** This involved the replacement of end of life hardware with modern PCs to increase device performance, reduce power usage and reduce associated desktop support calls.
- **Corporate Refresh.** This involved the upgrade of end of life hardware and the installation of the latest Microsoft Office 365 technology. This providers greater flexibility in the use of Microsoft Cloud technologies and also reduces the risk of aged hardware failure through the replacement of out of support hardware.
- **Unified communications.** This project replaces the multiple wide area network contracts that we held with a single contract. This will also enable the greater use of Unified Communications capabilities, such as videoconferences, desktop sharing and significantly increased call management capability.
- **Service Enhancement.** Our IT servers are run across seven datacentres, under various support and operations contracts, with CGI, Enzen and Wipro as service providers. This project is to rationalise this estate and to utilise modern secure private cloud infrastructure. The operation of the current estate equates to £7m of our IT opex. This project will simplify the estate that is currently in place, utilise the latest infrastructure technology and reduce the overall operating cost of IT in NGN. It will also enable greater flexibility and speed in the provision of environments and infrastructure once in place, enabling a faster pace of change for other systems initiatives.

The majority of the **Plant, Tools and Equipment** expenditure was associated with modifying governors and installing network loggers to enable remote management of pressures on the network. Remote pressure management is a key strategic project which will give advance warning of customer supply interruption and greater control of average system pressures in order to reduce leakage volumes and hence operating costs.

Expenditure on **Land, Buildings, Furniture and Fittings** consists of existing and new build related opportunities. During 2014/2015 we started to develop a common 'look and feel' template for all of our properties, the aim being to provide the best possible working environment for our colleagues and to provide them with the workspace that best enables them to work in the most efficient manner possible. Projects completed during this period included upgrades to our Hull, Bradford and Pontefract depots, and design work for depots and offices in Leeds.

During this year we spent £4.5m on **Operational Vehicles.** We have an ongoing vehicle replacement programme to ensure we have a fit for purpose fleet, to improve operational efficiency and support new job roles. We use a risk model methodology to determine which vehicles are in greatest need of replacement based on actual data rather than any set mileage/age criteria. During 2014/15 we purchased 156 vehicles for both new and existing job roles.

Within the **Other** category the major expenditure item was associated with the replacement of AVK valves as a result of a number of failures of Mark 3 Fig. 555 valves in a number of gas networks. The supplier indicated a batch problem with the bolts retaining valve bonnet. Independent analysis indicated bolts were subject to Hydrogen enrichment resulting in brittle bolts, so all gas networks were required to demonstrate to the Health and Safety Executive that we were managing the risk associated with these valves.

## 5.3.7 Capex cumulative position under RIIO

| Cumulative Capex 14/15 prices (£m) | 13/14 | 14/15 | Cumulative Total | Cumulative Allowance | Variance |
|---|---|---|---|---|---|
| LTS, storage and entry | 9.0 | 15.0 | 24.0 | 25.8 | (1.8) |
| Connections | 6.7 | 6.8 | 13.5 | 12.6 | 0.9 |
| Mains Reinforcement | 2.9 | 1.8 | 4.7 | 10.0 | (5.3) |
| Governors replacement | 2.1 | 1.4 | 3.5 | 3.2 | 0.2 |
| Other Capex | 20.3 | 23.6 | 44.0 | 57.4 | (13.4) |
| *Of which IT* | 5.4 | 4.9 | 10.3 | 11.0 | (0.7) |
| *Of which vehicles* | 4.0 | 4.5 | 8.5 | 10.5 | (2.1) |
| **Total** | **41.0** | **48.6** | **89.6** | **109.0** | **(19.4)** |

**Figure 5.17: Cumulative Capex position compared to the allowance**

The table above summarises our cumulative Capex expenditure over the first two years in the RIIO-GD1 price control against the allowances for that period. Overall we have underspent the cumulative allowance by £19.4m. The main drivers for this are;

- Reduced demand-driven mains reinforcement work (£5.3m), as economic conditions have not recovered as expected when the allowances were set;
- Extended lives for our vehicles as we now use a risk based model to determine replacement rather than a fixed period (£2.1m);
- Xoserve capital expenditure lower than that expected in the allowance (£2.0m); and
- Timing and efficiencies in delivering both above and below 7 bar capital investment projects, contained with LTS, storage and entry, and Other Capex.

In terms of efficiencies, we have introduced a more commercial focus to the end to end Capex process with specific targeted efficiencies by activity area. This now includes processes to ensure we are engineering for value, specifically through;

- Investment teams, peer review and challenges of design;
- Smarter planning to long term targets; and
- Revised and improved network analysis to identify the best long term options on a wider scale.

We are specifically targeting synergies and economies of scale across both activity area and geographic location e.g. visit a site once to upgrade all components with one contractor, as opposed to revisiting year on year. We are also using more detailed analysis of asset health, which allows us to better manage trade-offs and decisions between maintenance and replacement of assets.

## 5.3.8 Capex forecasts

### 2014/15 actuals against forecast

| 2014/15 Capex forecast 14/15 prices (£m) | 14/15 forecast | 14/15 actuals | Variance |
|---|---|---|---|
| LTS, storage and entry | 11.1 | 15.0 | 3.9 |
| Connections | 6.3 | 6.8 | 0.5 |
| Mains Reinforcement | 1.9 | 1.8 | (0.2) |
| Governors replacement | 1.4 | 1.4 | (0.0) |
| Other Capex | 23.1 | 23.6 | 0.5 |
| *Of which IT* | 6.0 | 4.9 | (1.1) |
| *Of which vehicles* | 3.6 | 4.5 | 0.9 |
| **Total** | **43.9** | **48.6** | **4.6** |

**Figure 5.18: 2014/15 actual Capex position compared to the prior year forecast**

The table above summarises our actual Capex in 2014/15 against the forecast for 2014/15 we submitted last year. Overall we spent £4.6m more in 2014/15 than the £43.9m we forecast last year, an 11% increase. The main drivers for this variance are;

- A £3.9m increase in expenditure on LTS, storage and entry projects. We underspent last year in this area because we were largely delivering detailed designs and ordering long lead times to be used for projects which would begin construction over the next two years. This increase in expenditure compared to our forecast is as a result of us successfully accelerating the construction phase of many of these projects;
- A £1.1m decrease in IT expenditure. This is largely due to timing. We are implementing a new IT strategy for the network, which has led to the postponement of several projects. For further details please see Section 5.2.4; and
- A £0.9m increase in vehicle expenditure. This is largely due to the insourcing of some roles from contractors and creation of other roles which all required new vehicles. Both these increases were not in our original plan.

### RIIO-GD1 forecast

The table below summarises our RIIO Capex expenditure forecast, based on the first 2 year's actual performance and a forecast for the remaining six years. We fully expect to achieve all of our output targets through our Capex investment programme, in particular our asset health indices, whilst outperforming the allowances.

LTS, storage and entry expenditure varies year on year given the major project driven nature of the work. This is a key area that will be impacted by our revised Capex management approach.

Connections expenditure includes both normal customer driven connections work and fuel poor connections. We expect customer driven connections work to remain broadly flat, with increases in connections to new properties being offset by reductions in connections to existing properties. Fuel poor connections expenditure follows the profile detailed in the outputs section 2.6.1, where workload peaks in 2015/16 and then reduces slightly. This more than delivers our fuel poor output target and the front loading of the work shows our commitment to this key social obligation output.

Mains reinforcement forecast workload and costs are again impacted by expected economic growth. We are forecasting marginal workload increases over the next two years, and are then targeting increased efficiency in this area, resulting in marginal cost savings for the rest of the period.

We are aiming to increase governor replacement workload until 2016/17, front loading the workload, with a reduction after that.

Other Capex, similar to LTS, storage and entry, varies year on year given the project driven nature of this work. Again, this is a key area that should be impacted by our revised Capex management approach, in particular for plant and equipment expenditure. The other key elements that vary materially year on year are IT and vehicle expenditure.

| **RIIO Capex forecast 14/15 prices (£m)** | **13/14 Actual** | **14/15 Actual** | **15/16** | **16/17** | **17/18** | **18/19** | **19/20** | **20/21** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| LTS, storage and entry | 9.0 | 15.0 | 16.1 | 15.1 | 11.4 | 13.9 | 13.5 | 12.9 | 106.8 |
| Connections | 6.7 | 6.8 | 8.2 | 7.4 | 7.1 | 6.9 | 6.8 | 6.7 | 56.6 |
| Mains Reinforcement | 3.0 | 1.8 | 1.9 | 2.8 | 4.1 | 4.0 | 4.0 | 3.9 | 25.6 |
| Governors replacement | 2.0 | 1.4 | 2.1 | 2.3 | 1.8 | 1.8 | 1.8 | 1.8 | 14.9 |
| Other Capex | 20.3 | 23.6 | 28.5 | 23.9 | 18.6 | 16.6 | 17.8 | 17.3 | 166.7 |
| *Of which IT* | 5.4 | 4.9 | 6.9 | 6.9 | 5.9 | 5.8 | 5.8 | 5.8 | 47.5 |
| *Of which vehicles* | 4.0 | 4.5 | 3.9 | 1.8 | 0.1 | 0.1 | 3.8 | 3.3 | 21.3 |
| Total | **41.0** | **48.6** | **56.9** | **51.6** | **43.0** | **43.2** | **43.8** | **42.5** | **370.6** |
| Allowance | 52.5 | 56.6 | 59.7 | 55.5 | 42.4 | 42.9 | 42.8 | 43.5 | 395.9 |
| **Variance** | **(11.5)** | **(8.0)** | **(2.8)** | **(3.9)** | **0.6** | **0.3** | **1.0** | **(1.0)** | **(25.3)** |

**Figure 5.19: Capex forecasts compared to the allowance**

# 5.4 Repex Performance

Replacement (Repex) activities are generally associated with the replacement of old metallic pipes which potentially cause a safety risk if the pipe fractures and allows gas to escape. Pipes are generally classed as a main, serving a number of customers, or a service, which typically connects the main to a customer's meter.

The majority of work is split into different tiers of main based on diameter band, with any associated services collected against the appropriate tier. For further details on this please see section 2.2.1. The remainder of the work consists of diversions, risers and sub deducts.

## 5.4.1 Repex compared to the allowance

| Replacement expenditure | Net Costs 14/15 prices (£m) | Workload |
|---|---|---|
| Tier 1 – Mains laid | 52.1 | 527.1 km |
| Tier 1 – Associated services | 17.2 | 37,709 |
| Tier 2a – Mains laid | 2.4 | 8.3 km |
| Tier 2a – Associated services | 0.1 | 146 |
| Other – Mains laid | 10.2 | 52.6 km |
| Other – Associated services | 0.7 | 1,790 |
| Diversions – Mains laid | 1.6 | 11.6 km |
| Diversions – Associated services | 0.1 | 224 |
| Other services | 10.0 | 7,551 |
| Risers | 0.0 | 5 |
| Sub deducts | 0.1 | 39 |
| **Total** | **94.5** | |
| **Allowance** | **99.2** | |
| **Variance** | **(4.7)** | |

**Figure 5.20: 2014/15 Repex costs and workload**

The table above sets out our 2014/15 Repex costs and workload, along with the cost allowance.

Overall we spent £94.5m against an allowance of £99.2m (after adjusting for lower than allowed Tier 2A workload). This £4.7m saving will be shared with our customers under the Totex sharing mechanism.

We achieved this whilst delivering all of the associated outputs, as detailed in section 2. In particular we exceeded the Tier 1 mains abandonment target by c44km. This was part of a deliberate strategy to target poor performing mains to deliver both customer and efficiency benefits. It also provides us with further flexibility when managing work for the rest of RIIO-GD1, especially in the event of a severe winter. As we are ahead of target there would be limited necessity to lay pipes during the worst working conditons.

## 5.4.2 Mains and Services year on year performance

| Mains and Services (14/15 prices) | 2013/14 | | | 2014/15 | | |
|---|---|---|---|---|---|---|
| | Net Costs £m | Workload km | Unit Costs £ | Net Costs £m | Workload km | Unit Costs £ |
| Tier 1 – Mains laid | 46.8 | 472.1 | 99 | 52.1 | 527.1 km | 99 |
| Tier 1 – Services | 16.5 | 34,556 | 478 | 17.2 | 37,709 | 456 |
| Tier 2a – Mains laid | 2.3 | 8.1 | 282 | 2.4 | 8.3 km | 289 |
| Tier 2a – Services | 0.1 | 210 | 486 | 0.1 | 146 | 445 |
| Other – Mains laid | 10.5 | 48.3 | 216 | 10.2 | 52.6 km | 194 |
| Other – Services | 0.7 | 1,582 | 424 | 0.7 | 1,790 | 391 |
| Diversions – Mains laid | 3.0 | 11.8 | 255 | 1.6 | 11.6 km | 138 |
| Diversions – Services | 0.2 | 273 | 569 | 0.1 | 224 | 560 |
| Other services | 9.9 | 7,551 | 1315 | 10.0 | 7,551 | 1324 |
| **Total mains laid** | **62.5** | **540.3** | **116** | **66.3** | **599.6** | **111** |
| **Total services** | **27.4** | **44,172** | **620** | **28.1** | **47,420** | **593** |
| **All in mains cost** | **89.9** | | **166** | **94.5** | | **157** |

**Figure 5.21: Repex year on year variance**

In terms of year on year performance, the all in mains laid unit rate averaged £157 per metre in 2014/15 against the 2013/14 equivalent of £166 per metre, an overall reduction of 5%.

In total we laid an extra 59.3km of mains. 55km of this increase was in Tier 1, the lowest cost tier. This also led to a c3,150 increase in services workload. Based on last year's unit rates, this year's workload mix should have cost £161 per metre all in. This implies that just over half of the 5% overall unit rate reduction was driven by workload mix, with the balance driven by improved efficiencies.

The main drivers for our improved efficiency are;

- We carried out a review of our Repex processes in 2014/15, focussing on the pre construction activities - project selection, project build and various pre construction enabling works. The main changes included more closely aligning all of these activities on a regional basis rather than having them centralised. This maximises local knowledge, improves local ownership, and improves communications flow and workload management across all of our field activities. We expect to realise further benefits from these changes in future years; and
- We have further increased use of direct contracts with end service providers, rather than through larger intermediary contractors. This both removes the profit margin of the intermediary, and gives us greater control of the end to end Repex process.

## 5.4.3 Risers year on year performance

NGN have an obligation to manage the risks identified with mains and services associated with medium and high rise buildings. We manage this through an ongoing program of surveys and then carry out remedial work on both a reactive and planned basis as required. In 2014/15 we have replaced five risers at a cost of c£32k. All these projects with the exception of one building were relatively short in length and not technically challenging.

In 2014/15 we have completed a 3 year program to survey the existing population of high rise buildings held on our SAP asset repository. This exercise has resulted in a smaller number of riser replacements being required than anticipated. In 2015/16 we will be starting an annual sampling survey program for buildings below 5 storeys and therefore we expect costs, workload and complexity to increase in future years.

## 5.4.4 Sub-deduct year on year performance

Sub-deduct networks present a potential safety risk as the owner and operator of these networks is not always clear. We use a risk based approach to manage and target our sub-deduct work programme.

In 2014/15 we have re-engineered twenty one sub-deduct networks and removed eighteen secondary meter installations to remove the identified risk, at a cost of c£53k. Another thirty sites have been identified as no longer being sub-deducts.

## 5.4.5 Repex cumulative position under RIIO

| Cumulative Repex 14/15 prices (£m) | 13/14 | 14/15 | Cumulative Total | Cumulative Allowance | Variance |
|---|---|---|---|---|---|
| Repex | 90.0 | 94.5 | 184.4 | 197.8 | (13.4) |
| **Total** | **90.0** | **94.5** | **184.4** | **197.8** | **(13.4)** |

**Figure 5.22: Cumulative Repex position compared to the allowance**

Cumulatively we have outperformed the Repex allowance of £197.8m by £13.4m (7%).

It is important to remember that the majority of the allowances are fixed and do not vary by workload, with the exception of Tier 2a which represents less than 1% of the total expected mains abandonment. To date we have deliberately exceeded the Tier 1 mains abandonment target by c55km to deliver customer and efficiency benefits earlier. This implies, when workload adjusted, that our efficiency outperformance against the allowance is greater than the 7% outperformance stated above.

## 5.4.6 Repex forecasts

### 2014/15 actuals against forecast

| 2014/15 Repex forecast 14/15 prices (£m) | 14/15 forecast | 14/15 actuals | Variance |
|---|---|---|---|
| HSE driven mains and services | 61.8 | 71.7 | 9.9 |
| Non HSE driven mains and services | 22.7 | 22.7 | 0.0 |
| Risers | 0.8 | 0.0 | (0.8) |
| **Total** | **85.4** | **94.5** | **9.1** |

**Figure 5.23: 2014/15 actual Repex position compared to the prior year forecast**

The table above summarises our actual Repex expenditure in 2014/15 against the forecast for 2014/15 we submitted last year. Overall we spent £94.5m, a £9.1m increase on the forecast.

We targeted to deliver c30km more abandonment in 2014/15, equivalent to c29km extra mains laid. This was part of a deliberate strategy to target poor performing mains and to provide us with further flexibility when managing work for the rest of RIIO-GD1. However we actually doubled this increase to nearly 58km, further supporting our strategy. Based on the unit rates detailed above, this implies a c£4.5m increase in costs when compared to the forecast.

The main drivers for the balance of the increased costs (c£4.5m) are;

- The increased complexity and engineering difficulty of the projects undertaken. We have deliberately targeted projects with the greatest return in terms of risk reduction and the strongest cost benefit analysis. This is one of the main drivers behind the improved risk reduction we have achieved compared to the forecast. See section 2.2.1 for further details; and
- The timing and cost of change associated with the Repex process review we undertook in 2014/15, and with increasing the use of direct contracts with end service providers for workload delivery, rather than through larger intermediary contractors. We expect both of these activities to deliver further process improvement and savings in future years.

## RIIO-GD1 forecast

| Repex forecasts 13/14 prices (£m) | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | Total |
|---|---|---|---|---|---|---|---|---|---|
| HSE driven mains and services | 65.7 | 71.7 | 63.4 | 59.6 | 58.0 | 57.4 | 54.1 | 54.1 | 484.1 |
| Non-HSE driven mains and services | 24.3 | 22.7 | 25.4 | 24.3 | 23.8 | 23.6 | 22.5 | 22.5 | 189.0 |
| Risers | 0.1 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 1.3 |
| **Repex totals** | **90.0** | **94.5** | **89.0** | **84.1** | **82.0** | **81.2** | **76.8** | **76.8** | **674.4** |

**Figure 5.24: Repex forecasts**

The table above summarises our RIIO-GD1 Repex expenditure forecast, based on the first 2 year's actual performance and a forecast for the remaining six years. We expect to achieve all of our output targets through our replacement programme whilst outperforming the allowances.

We will achieve this by re-engineering our replacement programme in line with our Total Network Management (TNM) approach. In particular we continue to fully utilise the added flexibility introduced in the new 3 tier approach to replacement, as well as maximising the return on this investment through a detailed cost benefit analysis approach.

In terms of the forecast cost profile above, we are introducing further efficiencies into our delivery model through expanding our commercial and operational strategy, which has already delivered benefits. We expect to achieve year on year unit cost savings as a result. In 2014/15 and 2015/16 we are increasing the length of mains taken off-risk by delivering more work. This will provide us with further flexibility when managing work for the rest of RIIO-GD1. We expect to counter this front loading of work with reduced work in the final two years of RIIO-GD1.

## 5.5 Uncertainties

RIIO-GD1 provides allowances that allow us to deliver the key outputs. The risk of costs exceeding these allowances is borne by NGN and its shareholders, not customers.

However, where future changes are outside of a company's control, or it is not possible to accurately forecast the level of future costs, then RIIO-GD1 re-opener mechanisms may be triggered. Such mechanisms provide additional (or reduced) revenue to cover in whole or in part the additional (or reduced) costs being incurred.

### 5.5.1 Site security

The Department for Energy and Climate Change (DECC) has engaged with the energy sector over a number of years to develop a program to identify sites of critical national infrastructure. The Centre for the Protection of National Infrastructure (CPNI) then makes recommendations for security requirements at these sites. DECC worked initially with National Grid Transmission, who upgraded the physical security of a considerable number of sites. DECC is now developing programs with NGN and the other gas distribution networks.

#### Current Position

Pannal offtake site has been identified and confirmed as our only critical site that needs a security upgrade to meet the CPNI categorisation requirements. National Grid Transmission (NGT) also have a number of assets on four of our offtake sites that will require security upgrading. It has now been confirmed that the cost of these four upgrades will be funded by NGT.

#### Future expectations

DECC has not specified timescales for completing work and it is up to us to detail our proposals for DECC approval. The Pannal site also includes NGT assets that require a security upgrade. The total site upgrade cost is estimated at £4.1m. We will fund £3.0m with the balance funded by NGT, based upon the percentage of land occupied by the respective company's assets. This level of cost alone would not trigger the individual re-opener threshold of £5.3m.

### 5.5.2 Street works

Street works costs vary considerably between networks as the Highways Authorities in different parts of the country have introduced permit schemes at different times with different approaches. Many authorities are yet to introduce schemes, and so an uncertainty mechanism exists to recover efficiently incurred costs associated with any new schemes or changes to schemes.

#### Current Position

North Tyneside introduced a new permit scheme from the 9th of February 2015 covering all streets within their boundary, which has had a limited impact on our 2014/15 performance. The Yorkshire Common Permit Scheme is still ongoing. This commenced in June 2012 covering Leeds, Kirklees, Calderdale and Doncaster, and is effective in relation to traffic sensitive streets.

This year we have significantly improved our 'S74 charges received' performance, seeing a 35% year on year reduction.

#### Future expectations

Bradford, Calderdale and Wakefield implemented a permit scheme (under the Yorkshire Common Permit Scheme) on 1st April 2015. The approval of permit schemes has also now been devolved from the Secretary of State to local authorities which may result in an increase in the number undertaking permit schemes.

Whilst there are no active lane rental schemes in operation, the Department for Transport has been engaging with all utilities so there may be potential for schemes to start in the near future.

### 5.5.3 Connections of new large loads

This covers the cost of connecting new large loads (e.g. power stations) that pass the 'economic test' and therefore costs are not fully recovered from the connecting party. Over the past year we have not connected any large loads so have not incurred any additional costs associated with this activity.

### 5.5.4 Changes in the connections charging boundary for gas

This mechanism will only be triggered if there is a change from a 'deep' to a 'shallowish' connection boundary for distributed gas. Moving from a 'deep' to a 'shallowish' connection boundary would mean the connecting customer would no longer pay the full costs of connection up front. Such a mechanism would result in the connecting party paying less in connection charges with the shortfall being funded by NGN.

There are no current proposals to change the connections charging boundary and therefore there are no costs incurred in this area.

### 5.5.5 Smart meter roll out

The exact impact on NGN of the roll out of smart meters is uncertain. We do expect an increase in call volumes to the emergency response line, and increased call-outs to deal with problems with our equipment discovered when a smart meter is being fitted e.g. a faulty Emergency Control Valve.

#### Current and future position

The official national smart meter roll out was expected to start in 2015, but has now been delayed until 2016. Some energy companies have already started to install smart meters, but given the delay to the national programme we don't expect to see mass installation until later next year. We have now started receiving more information from the Suppliers about their roll out plans as a result of the industry change request (SPAA) raised by us. Although many of the plans are high level they will allow us to do more internal planning.

We currently have c110,000 smart or advanced meters fitted in our network. We have updated our work management systems to track work carried out on these meters, and since the beginning of 2015 we have seen just over 1,000 PREs involving a property with a smart meter. Of these call outs, c12% were due to a fault on the meter which should have been referred to the Supplier, and 3% were due to a leak on the meter installation.

Overall this ratio is in line with what we were expecting, and is currently not having any perceptible impact on our operations. However this is likely to change when the accelerated roll out plans begin.

### 5.5.6 Xoserve (central agency) review

Xoserve is currently funded by NGN, the other GDNs and the NTS under the Funding, Governance and Ownership (FGO) arrangement. However there are proposals to change the FGO, under which gas shippers and suppliers may fund some Xoserve activities directly themselves. Should this occur then Ofgem will trigger this re-opener under the uncertainty mechanism, with the likely outcome being a reduction in our allowances for Xoserve costs.

## Current position

In October 2013 Ofgem published their conclusions, including a proposal for the industry to take the conclusions forward for future implementation. The GDNs and Xoserve spent the first quarter of 2014 considering these outputs in detail and in April 2014 collectively launched a new Programme Overview Board (POB) to take forward the work programme. In late 2014 the Gas Transporters initiated a procurement exercise through the Energy Networks Association for a Programme Manager. KPMG were appointed in January 2015, and work is now progressing on a number of detailed work streams in order to deliver the requirements of the FGO review.

## Future expectations

The programme currently anticipates delivery of a revised operating model in 2016 with changes to the funding mechanism following in 2017. It is likely that some non-core elements of the programme will be progressed following the initial go live in April 2016.

### 5.5.7 Non gas fuel poor network extension scheme

Ofgem are currently undertaking a review of the scheme. Should the review conclude the scheme should be scaled down or terminated then Ofgem will trigger this reopener to reflect the reduced requirements on NGN.

## 5.6 Performance improvement and efficiencies

This section details our approach to performance improvement, and how we have used this to both drive efficiencies and meet our output targets.

### 5.6.1 Benchmarking

#### Approach to benchmarking and performance improvement – in year and future

We recognise the importance of understanding how companies in a range of sectors outside utilities are run, helping us to be the best at what we do. In order to achieve this we provide our colleagues with a number of opportunities to visit different businesses, both in our local geography, nationally and internationally.

#### Customer experience

Our aim is to deliver industry-leading customer service, so we have been benchmarking our performance against the very best businesses in the UK.

In 2014/15 we have;

- Gained a ServiceMark from the Institute of Customer Service;
- Joined the Considerate Constructors Scheme, becoming one of the first GDNs to win two awards; and
- Won no less than nine national awards for customer service and three for our employee engagement.

These achievements have been fantastic for morale but most importantly they have allowed us to engage with some of the UK's most dynamic businesses, as well as forging new partnerships beyond our own sector. These relationships continue to help us to innovate and push the boundaries of what a modern utility company is capable of.

In order to share best practice relating to customer experience, employee engagement and benchmarking as well as to learn how to put customer experience at the top of the business we have visited Superdrug, Direct Line, EdgeHill University, Assa Abloy.

When talking to these organisation in detail, we have realised how much we have in common, although the organisations can be completely different. If we take Edgehill University for example – for their students they really become the home away from home and often students will not have ever lived away before, so they help to offer practical support (maintaining the housing, even down to changing light bulbs etc., but they also offer a softer support for students who may be missing home).

As a gas company, although very different, we have a massive impact on our customer's home environments as we realise the importance of how comforting home can be. So, if there is any additional support that we can offer to our customers to help them over the period that we interact with them, we'll do whatever is practically possible. Additionally, many of these meetings have covered getting Customer Experience to the top of the business agenda.

#### Learning from other GDNs

We're working together with other Gas Distribution Networks using the 'power of four' to deliver benefits in the areas important to our stakeholders and us.

Working together we try to;

- ensure no person is harmed through accidental Carbon Monoxide (CO) poisoning;
- support the eradication of fuel poverty;
- safeguard the needs of our vulnerable customers; and
- reduce our impact on the environment to provide a sustainable greener future for gas.

Through these engagements we are able to learn best practice and determine what has not worked and why. By working together, we have achieved so much more than we could ever have done separately, allowing us to effectively communicate consistent messages to national, regional and local audiences, whether that is lobbying for policy change or becoming more accessible to our stakeholders through our partnerships. It makes for

streamlined working as we share the costs of activities and lobbying, develop joint communications and activities, ultimately delivering outcomes efficiently for customers.

Our dispatch team have visited Wales and West Utilities to share best practise, to learn about their systems, technology, shift patterns and performance monitoring.

### Technology

We have had visitors from Leeds City Council, MBNA (bank of America), Scotia Gas Networks, and Wales and West Utilities who came to lean and share their knowledge about accelerated delivery techniques, enterprise class agility, agile ways of working, and Kanban boards.

We have learned that we are using more agile techniques in NGN, such as SCRUM and Kanban and we wanted to see them in action as well look at the technical enablers that they have to support their agile techniques such as automated repeatable tests. These things have now been implemented in NGN and we continue to develop and use them here.

### Cost benchmarking

Cost benchmarking is the method used by Ofgem to compare costs across the GDNs based on their workloads. This is a comparative analysis which allows NGN to measure the efficient level of costs.

To evaluate our individual efficiency in 2014/15, we applied the same econometric technique (as for RIIO) on Totex, various disaggregated activities, as well as Opex and Capex levels assuming that other GDNs remained where they were in 2013/14.

The provisional benchmarking results show that NGNs Totex individual efficiency has improved from 2013/14 to 2014/15. We therefore expect to maintain our frontier efficiency position. This is consistent with previous years where NGN has been benchmarked as the best performing GDN.

## 5.6.2 Real Price Effects (RPEs)

Under RIIO-GD1, allowed revenues are indexed by the Retail Price Index (RPI). However it is expected that the price of several inputs will not change in line with RPI inflation, most notably labour. To account for this differential our allowances are based on forecast differences between economy-wide inflation, as measured by RPI, and input price inflation, which is known as the Real Price Effect (RPE). In other words, RPEs represent the actual change in input prices over and above the level of inflation in the economy.

Specifically, RPE is calculated by the following formula:

**RPE = Input Price Inflation** *minus* **Retail Price Inflation**

The approach used to setting RPEs over RIIO-GD1 was to draw on outturn data and short term wage growth forecasts using the latest forecasts published by HM Treasury, and use the real average historical rate for relevant input price indices for all other years.

### Labour RPEs

For labour costs, which comprise around 60% of our costs, forecast RPEs are based on independent forecasts for wage growth over the short term. This indicated negative real wage growth in the first year of RIIO reverting to the long term trend of 1.3% per annum from 2014/15 onwards.

For 2014/15, allowances were based on a positive labour RPE of 1.3% following two years of negative real wage growth as shown in the table below.

| Labour RPEs | Assumption RPE | Retail Price Index | Assumed Labour wage change | Actual labour wage change | Actual RPE |
|---|---|---|---|---|---|
| 2012/13 | -0.8% | 3.1% | 2.3% | 2.7% | (0.4)% |
| 2013/14 | -0.2% | 2.9% | 2.7% | 2.9% | 0.0% |
| 2014/15 | 1.3% | 2.0% | 3.3% | 2.7% | 0.7% |

**Figure 5.25: Labour RPEs**

During the year our average wage settlement was 2.7%, which at the time of the settlement was in line with the forecast RPI. This was part of a two year pay deal providing certainty for both colleagues and NGN. This package of measures included;

- In 2012, NGN introduced revised terms and conditions of employment applicable for new entrants and those existing colleagues who were promoted internally. The objective of the refreshed remuneration package was to drive efficiency improvements and achieve our outputs. Base pay levels were reduced, weekly contracted hours were increased and occupational sick pay was more reflective of the market. The positive impact on the refreshed remuneration arrangements is now being experienced by the business. There has been no detriment to the attraction of talent to the business.
- In line with our ambition to be the best at all that we do, we are striving for increased productivity and output levels and a customer-focused culture of 'right first time'. To help this approach we have also introduced a number of process specific incentive schemes. These are designed to incentivise colleagues to deliver excellent customer service, adopting a culture of safety first, ensuring that work is undertaken in the most efficient way possible and that all records are accurately maintained at the end of each piece of work.
- As we amend our remuneration packages to better reflect the appropriate reward strategies, we are quickly moving to a position where those colleagues within corporate / central functions are generally all retained on personal contracts. This allows us to incentivise them, setting specific personal objectives and achievements recognised with an annual bonus. This methodology keeps base salary levels at a reasonable level and provides us with the flexibility to reward performance on an annual basis, thereby not increasing the overall salary bill on an enduring basis.

## Non-labour RPEs

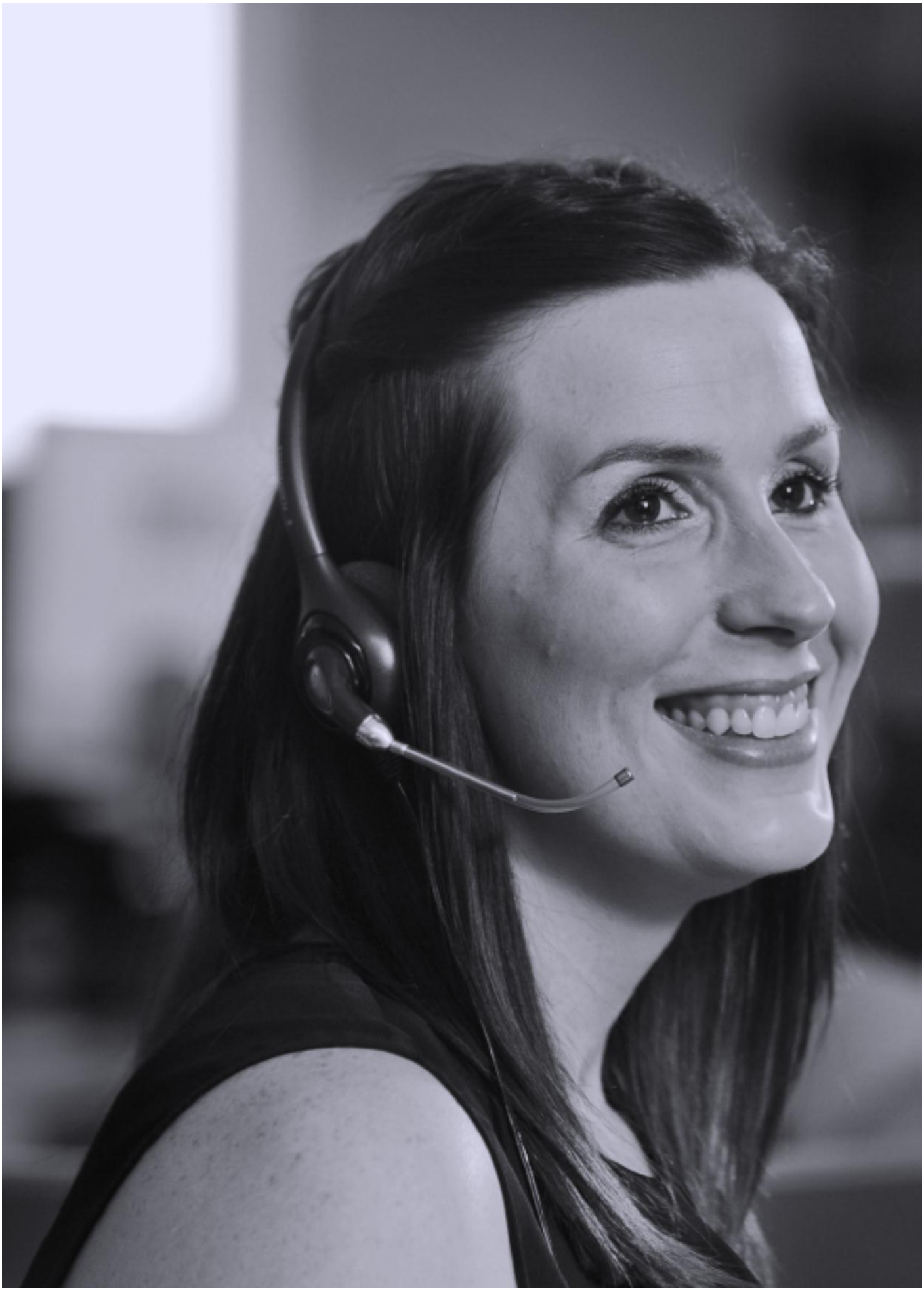
For RIIO-GD1, RPEs for Capex and Repex materials were assumed to have a positive change of 1.7% from 2013/14 onwards. This means that material costs were assumed to increase more than inflation year on year. Capex and Repex material costs comprise less than 10% of our total costs.

This assumption was based on an unweighted average of PAFI indices for steel works, plastic pipes and copper piping. Our PE pipes and fittings are currently dictated by a variety of indices such as PIEWEB , LEBA, ICIS and Oanda, which monitor fluctuations in Power, Polymer and Copper markets.

The table below shows that in 2014/15 PE pipe and PE fittings prices have dropped. This reduction in costs is driven by the drop in oil prices which had an impact on the indices. The mechanism detailing the constituents and the indices are set during a tender event. The last tender event was executed in 2013 for a 3 year contract with a provision for a 2 year extension.

| Non Labour RPEs | Assumed RPE | Retail Price Index | Assumed material price | Actual PE pipes price | Actual PE fittings price | Actual RPE for PE pipes | Actual RPE for PE fittings |
|---|---|---|---|---|---|---|---|
| 2014/15 | 1.7% | 2.0% | 3.7% | (5.7)% | (3.1)% | (7.7)% | (5.1)% |

**Figure 5.26: Non Labour RPEs**



# Financial Performance

6

# 6 Financial Performance

This section considers;

- The Regulatory Asset Value (RAV) for all years of RIIO-GD1
- The Return on Regulatory Equity (RoRE) and the individual elements that are driving outperformance

## 6.1 RAV

Regulatory Asset Value (RAV) represents the value of assets that we own at any given point in time. It is now updated annually as part of the annual iteration process to reflect actual Totex expenditure and the associated incentive impact.

Depreciation and return on RAV allowances are key elements of the revenue calculations and are dependent on the latest RAV position.

The revenue adjustments shown in Section 2 rely heavily on RAV being updated – after taking into account the latest Totex forecasts our RAV position is shown below. The November 2014 PCFM has been used as the basis to calculate RAV in future years and is therefore inclusive of any outperformance from totex efficiencies.

| RAV (14/15 prices £m) | Actuals | | Forecast | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 13/14 | 14/15 | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | |
| **Opening asset value** | **1,876** | **1,862** | **1,874** | **1,901** | **1,931** | **1,956** | **1,979** | **1,999** | **1,876** |
| Add : Slow Money (Opex & Capex) | 49 | 51 | 53 | 52 | 47 | 47 | 47 | 47 | 394 |
| Add : Slow Money (Repex) | 48 | 56 | 61 | 68 | 74 | 80 | 86 | 93 | 566 |
| Opening GDPCR1 Adjustment | (17) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (17) |
| **Total Additions** | **80** | **107** | **115** | **119** | **121** | **128** | **133** | **140** | **943** |
| **Less: Depreciation** | **(94)** | **(95)** | **(88)** | **(89)** | **(96)** | **(105)** | **(113)** | **(124)** | **(805)** |
| **Closing asset value** | **1,862** | **1,874** | **1,901** | **1,931** | **1,956** | **1,979** | **1,999** | **2,015** | **2,015** |

**Figure 6.1: RAV forecast**

## 6.2 RoRE

Ofgem use Return on Regulatory Equity (RORE) to measure the potential financial returns or penalties on the portion of the value of the company that is financed by equity.

Ofgem estimate RORE using the cost of equity (6.7%) as the starting point of their calculation as this amount is funded by Ofgem directly in revenue.

Estimates of any additional positive or negative adjustments to this figure are estimated by dividing the financial value of these adjustments by the 35% notional equity portion of RAV.

Ofgem's view is that the best performing companies should be able to earn a double digit return (>10%). Our overall RORE for 14/15 is 10.97%, 4.27% above the baseline cost of equity of 6.7%. Totex outperformance of £30m (14/15 prices) accounts for 2.99% of this. Our forecast for RIIO-GD1 as a whole is 11.49%.

| RORE | 13/14 | 14/15 | RIIO Actuals to date | | RIIO 8 year forecast |
|---|---|---|---|---|---|
| **Base cost of equity** | **6.70%** | **6.70%** | **6.70%** | | **6.70%** |
| Totex | 3.50% | 2.99% | 3.24% | | 3.47% |
| Customer Service | 0.36% | 0.33% | 0.34% | | 0.33% |
| Environmental Emissions | 0.24% | 0.33% | 0.29% | | 0.32% |
| Shrinkage | 0.08% | 0.07% | 0.08% | | 0.07% |
| Exit Capacity | 0.00% | 0.07% | 0.04% | | 0.16% |
| IQI Income | 0.44% | 0.46% | 0.45% | | 0.44% |
| **RORE** | **11.32%** | **10.97%** | **11.14%** | | **11.49%** |

**Figure 6.2: RORE breakdown**

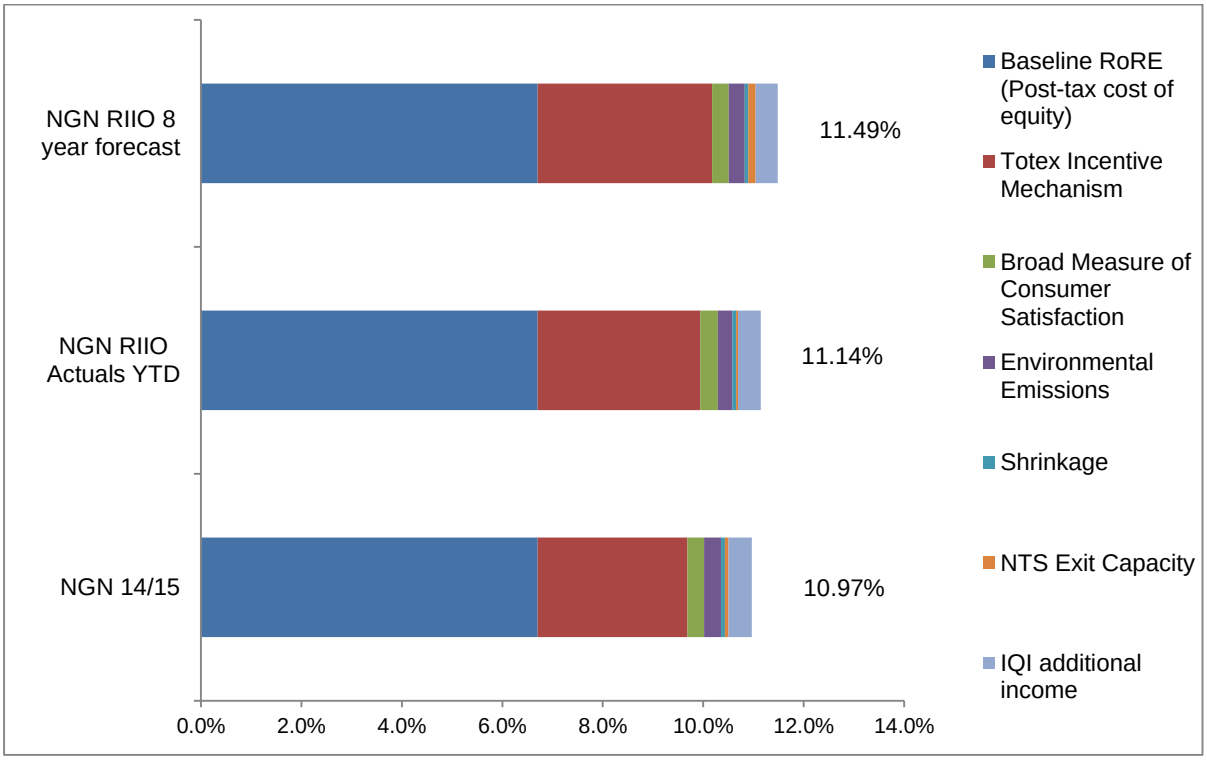



**Figure 6.3: RORE graph**

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