

# **RIIO-GD2** Strategic Commentary 2022-2023



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# 1 Chief Executive's Update

This report sets out the details of our performance in 2022/23 and represents the second year of the five-year RIIO-2 Regulatory Period. The RIIO-2 Regulatory Contract introduced a new set of operating, customer and financial targets that stretched the levels of performance required to new levels. Responding to these new challenges has required us to continue to adapt and innovate at an ever-increasing rate, to meet the expectations of our customers and stakeholders. We continue to strive to lead the industry in terms of cost and service levels. Our performance in 2022/23 continues to push the frontiers of performance in the sector, delivering significant long-term value not only for our own customers but for all gas customers in the UK.

The external environment continues to provide additional significant challenges for us all. The impact of the cost of living crisis has placed unprecedented pressure on households and businesses across the UK and the real impacts of this crisis are starting to be seen even as inflation is forecast to ease. It is clear to us that the actions and decisions we have taken historically, including the fundamental changes we made to our business in RIIO-1, mean that we were well placed to continue to deliver our business objectives safely and efficiently, despite these external pressures.

I am very pleased that we have been able to maintain and even improve our performance in many areas in Year 2 of RIIO-2. We continue to perform strongly against all our customer outputs and meet our health and safety obligations. Where we identified shortfalls in our delivery, we have been able to quickly implement a clear plan of action to recover our performance. This is most evident, through our response to shrinkage performance which was underperforming in Year 1 of RIIO-2, however, through dedicated effort and planning we have recovered this position to be outperforming our year 2 targets. We seek continual improvement and learning at NGN and we have worked extremely hard to ensure that all our commitments will be delivered over the five-year period.

This year saw the continued significant impacts of the ongoing cost of living crisis which has impacted consumer confidence and resulted in radical changes to the prioritisation of expenditure in households. As a provider of an essential service, we have worked hard to support consumers and ensure the gas continues to flow to heat homes. This crisis has sadly further exacerbated the prevalence of fuel poverty across our region and severely impacted those who are most vulnerable. We have continued to work collaboratively at a national

level between NGN, the other energy network companies in the UK and the energy regulator Ofgem to explore all available options to minimise the impact of this crisis on energy customers. Supported by our shareholders we further increased the levels of funding available to help those who are vulnerable and continue to work closely with our well-established partners we have across our region to ensure that support is targeted to those in most need.

In addition to maintaining our "business as usual" gas network, we have also, along with the other energy networks, Ofgem and The Department for Energy Security and Net Zero (DESNZ) made significant progress in gathering evidence to deliver our shared goal of achieving Net-Zero carbon emissions by 2050. This included the successful delivery of the detailed design for the Redcar Hydrogen Village Trial, which is currently under consideration by DESNZ, and completion of the H21 phase 2b trial, which is currently being assessed by the Health and Safety Executive (HSE) to demonstrate that hydrogen poses no greater risk than methane. The evidence we are collecting is demonstrating that gas networks have a significant role, alongside electricity, in ensuring a safe, reliable and affordable pathway to 2050. Furthermore, gas is critical to the UK's long-term economic prosperity.

The challenges facing us all remain significant. In addition to those seen in 2022/23, ongoing affordability issues due to the cost of living crisis and continuing to mitigate our impact on climate change are adding to the challenges that must be addressed. However, we will meet these challenges head-on and NGN will continue to strive to lead the way in identifying how we balance customer bills, ensure safe and secure supplies of energy, whilst increasing the levels of customer service, meeting our environmental objectives and ensuring that nobody gets left behind on that journey. We look forward to identifying and delivering sustainable solutions to these challenges in collaboration with stakeholders.



Mark Horsley, Chief Executive Officer, Northern Gas Networks

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#### 2 **Board Statement**

The company's business strategy is to provide, develop and maintain a safe, affordable, and secure gas distribution pipeline system for the provision of gas supplies to the people and businesses within our region.

Underpinning this strategy is a strong compliance culture which the Board directly monitors through its risk management, audit, treasury, and compliance committees. The integrity of our reporting and information provided to customers and stakeholders remains a key focus. In 2023 we maintained our internal assurance of our reporting processes. As with previous returns, NGN's reporting process and associated controls align with examples of good practice across the industry.

During 2022/23 we continued to demonstrate strong customer, safety, reliability, and environmental performance. We are pleased with NGN's performance and in particular the performance against the output targets agreed as part of the RIIO-2 price control that have been delivered during the cost of living crisis, which has impacted all areas of our business. Incentive arrangements for the senior management team are directly linked to the safety, customer, and efficiency targets within the regulatory contract. These targets are updated annually.

The focus of the Board continues to be to support NGN in its ambition through significant investments and innovations in the network, supporting infrastructure and people aimed at improving the performance of the business in both the short and longer term.



Andrew Hunter, Chairman, Northern Gas Networks

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We delivered more Tier 1 mains replacement work than targeted, but 7km less than we delivered in 2021/22. We will continue to deliver above targets over GD2 in order to recover the shortfall seen during the Covid-19 pandemic.

We have recovered our Shrinkage and Environmental Emissions output following the shortfall against target last year to be back on track over the first two years. We are now forecast to outperform targets over RIIO-2. This was driven by average system pressure reductions and increased coverage of MEG, a gas conditioning agent used to saturate and swell lead yarn joints to reduce their propensity to leak.

Financial Summary fm, 18/19 prices	21/22	22/23	23/24	24/25	25/26
Regulatory Asset Value	2,262.1	2,290.0	2,316.8	2,339.8	2,355.0
Allowed Revenue	384.6	509.1	457.4	409.2	442.6
Return on Regulatory Equity	6.88%	6.73%	4.98%	4.71%	4.95%

The Regulatory Asset Value (RAV) increases year on year in line with expectations as we continue to invest in our assets. Allowed Revenue includes £81m and £21m in 2022/23 and 2023/24, respectively. for Supplier of Last Resort charges, which is a pass-through cost. The Operational Return on Regulatory Equity reduces throughout the price control as we expect our outperformance against the allowances to reduce over time.

Totex Incentive fm, 18/19 prices	21/22	22/23	23/24	24/25	25/26	Total
Actual costs	214.9	220.9	250.0	250.4	242.2	1,178.4
Adjusted Allowances	254.7	254.6	239.4	234.9	230.7	1,214.3
Outperformance	(39.8)	(33.6)	10.6	15.4	11.5	(35.9)
Outperformance %	(15.6%)	(13.2%)	4.4%	6.6%	5.0%	(3.0%)
Return to customers	20.3	17.1	(5.4)	(7.9)	(5.9)	18.3

We outperformed the allowances by 13.2% this year, but expect workload increases and cost pressures against a reducing allowance will lead us to spend more than the current inyear allowances over the remaining years of RIIO-2. We expect to deliver a 3.0% outperformance over RIIO-2, which compares to a forecast of 6.5% last year. The difference is due to a 1.6% increase in costs and 2.1% decrease in allowances, mainly driven by a fall in Real Price Effect adjustments which have lagged behind core inflation.

Other Incentives fm, 18/19 prices	21/22	22/23	23/24	24/25	25/26	Total
Customer service	1.4	1.6	1.7	1.8	1.8	8.2
Complaints	-	-	-	-	-	-
Unplanned Interruptions	-	-	-	-	-	-
Environmental Emissions	(0.3)	0.4	-	0.1	0.1	0.3

We expect to increase our customer service performance each year, delivering an £8.2m incentive over RIIO-2. We expect to pay no penalties under the Complaints and Unplanned Interruptions. We are in penalty in the first year under the Environmental Emissions incentive but this has been recovered in 2022/23.

# **Financial Performance**

# 4 Financial Performance

#### 4.1 Return on Regulatory Equity

Ofgem use the 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. RORE is calculated by using the cost of equity (Allowed Equity Return) as the starting point as this amount is funded directly in revenue. The cash value of any outperformance from the incentive mechanisms is then divided by the 40% notional equity portion of the Regulatory Asset Value to calculate the additional return on equity earned.

Return on Regulatory Equity	21/22	22/23	23/24	24/25	25/26
Allowed Equity Return	4.52%	4.56%	5.28%	5.24%	5.25%
Totex outperformance <sup>1</sup>	2.22%	1.88%	(0.53%)	(0.78%)	(0.57%)
Business Plan Incentive	0.13%	0.13%	0.13%	0.13%	0.12%
Customer Satisfaction Survey ODI	0.15%	0.18%	0.19%	0.19%	0.19%
Complaint's metric ODI	-	-	-	-	-
Unplanned Interruption Mean Duration	-	-	-	-	-
ODI					
Shrinkage Management ODI	(0.04%)	0.04%	-	0.02%	0.01%
Network innovation input for RORE	(0.02%)	(0.02%)	(0.04%)	(0.03%)	(0.02%)
Carry-over Network innovation	(0.02%)	-	-	-	-
Strategic innovation	-	-	-	-	-
Penalties and fines	(0.07%)	(0.04%)	(0.05%)	(0.04%)	(0.04%)
<b>RoRE</b> – Operational performance	6.88%	6.73%	4.98%	4.71%	4.95%

Our operational RORE starts at 6.88% and reduces over the price control to 4.95%, an average of 5.64% and slightly lower than the 5.71% forecast last year due to reduced Totex outperformance. After the Allowed Equity Return, the main driver is the Totex incentive mechanism. We expect our out-performance against the Totex allowances to reduce over time, partly due to workload movements, but also due to the tightening of the allowances, which include a very stretching efficiency assumption. In addition, allowances have decreased by 2.1% relative to last year on a 2018/19 price basis, mainly driven by a fall in GDN-specific Real Price Effect adjustments relative to CPIH inflation. We expect to earn

further rewards under the Customer Satisfaction Incentive, whilst the Shrinkage Management Incentive is forecast to be a slight positive over the price control.

#### 4.2 Revenue and Customer Bills

#### 4.2.1 Allowed Revenue

At the beginning of the price control Ofgem set our Base Revenue, assuming we deliver in line with the allowed costs and workload. Our Allowed Revenue is then calculated based on our actual cost and workload performance and is used to set customer bills. However, because of movements in customer numbers and levels of consumption, our Collected Revenue for that year is unlikely to match the Allowed Revenue. Any under or over collection is adjusted for in the following years' Allowed Revenue.

In addition to our LDZ (own) Revenue, the gas networks collect revenue to pay for the National Transmission System (NTS) Exit Capacity charges, and the Supplier of Last Resort payments. These are pass through costs – the gas networks have no control over the charges and simply collect the revenue to be passed on. However, they are a significant part of the end customer's bill.



<sup>&</sup>lt;sup>1</sup> Calculated differently to other tables (NGN TIM share, RAV disposals & Net Zero UIOLI)

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Our average LDZ Allowed Revenue for RIIO-2 falls in real terms to £385m, a 10.1% reduction from the RIIO-1 average of £429m, reflecting the challenging nature of the RIIO-2 settlement. NTS Exit Capacity charges increase from an average of £8m in RIIO-1 to £35m in RIIO-2. We also expect to collect c£102m in Supplier of Last Resort Payments in years 2 and 3 of the price control.

#### 4.2.2 Customer Bill Impact

The amount each customer pays through their bill is driven by three factors – Allowed Revenue for the year in question, changes in the number of customers, and changes in the level of gas consumption for these customers. For instance, if the number of customers increases for a fixed allowed revenue, then each customer would pay proportionally less.

Our domestic customer bill analysis shown below is calculated using NGN's average Annual Quantities (AQ) consumption and peak daily capacity requirements.



The average LDZ Domestic Customer Bill falls to £121, a 11.7% reduction from the RIIO-1 average of £137. This reduction is smaller than the reduction in Allowed Revenue which is a function of changing gas consumption. Exit costs increase significantly from £2 to £8 on the bill. Supplier of Last Resort payments increase the bill by £33 and £8 in 2022/23 and 2023/24 respectively.

# Our performance against the allowances

# 5 Our performance against the allowances

#### 5.1 Totex performance

Totex	21/22	22/23	23/24	24/25	25/26	Total	Allowed	Variance
Opex	73.9	85.7	90.9	90.1	89.4	430.0	461.9	(31.9)
Сарех	40.3	39.4	56.1	56.6	55.8	248.3	262.0	(13.7)
Repex	100.7	95.8	103.0	103.7	97.0	500.2	490.5	9.7
Totex	214.9	220.9	250.0	250.4	242.2	1,178.4	1,214.3	(35.9)
Allowance	254.7	254.6	239.4	234.9	230.7	1,214.3		
Variance	(39.8)	(33.6)	10.6	15.4	11.5	(35.9)		
Cumul. Variance	(39.8)	(73.4)	(62.8)	(47.4)	(35.9)			

This year we outperformed the Totex allowance by £33.6m.

Controllable Opex saw outperformance of £8.4m, largely from two factors:

- Lower than expected maintenance costs. Accelerating this workload in line with our plan post the Covid-19 pandemic has proved more difficult than we anticipated. This year we succeeded in increasing workload and cost by £2.3m, and our forecast assumes this increases further over the next three years.
- Lower than expected costs in Business Support. As expected, these costs have increased since last year, and we expect them to increase further over the next three years. Our Cyber Security resource will increase, we will invest more in our training and apprentice programme, and we expect insurance claims to return to the longer-term average.

Capex saw a £18.6m outperformance. Third party driven works account for c38% of this, with the TransPennine Rail Electrification project and Reinforcement workloads both lower than expected. Vehicle deliveries account for a further 25% of this, as purchases have been delayed due to worldwide supply chain shortages. The balance is mainly driven by delays with long lead items and a shortage of expert contractor resource impacting the delivery of some network capex projects.

Repex saw a £6.7m outperformance, driven primarily by lower-than-expected costs for Tier 1 Stubs. We also delivered marginally less workload across Tiers 2b and 3, and in  $> 2^{"}$  steel,

which do not have a volume driver. We will recover this over the remainder of the price control and meet all of our repex workload targets.

### 5.2 Opex performance

#### 5.2.1 Controllable Opex

Controllable Opex	21/22	22/23	23/24	24/25	25/26	TOTAL
(2018/19 prices)	Actuals	Actuals	Forecast	Forecast	Forecast	Forecast
Holder demolition	3.2	4.2	4.2	3.3	1.2	16.0
Env. Remediation	0.4	0.3	0.4	1.0	1.3	3.4
Other Work Mngt	10.3	12.9	12.4	12.3	12.3	60.3
Work Mngt	13.9	17.4	17.0	16.6	14.8	79.8
Emergency	9.0	10.2	10.8	11.0	11.2	52.2
Repair	14.3	17.0	17.3	17.6	17.9	84.1
Maintenance	12.9	15.2	17.6	16.9	17.2	79.8
Other direct activities	3.1	3.1	3.1	3.1	3.1	15.4
Work Execution	39.4	45.5	48.8	48.6	49.4	231.6
Business Support	18.7	20.1	21.6	20.9	21.2	102.6
Training / Apprentices	1.9	2.7	3.5	4.0	4.0	16.1
Total Costs	73.9	85.7	90.9	90.1	89.4	430.0
Final Allowance	96.6	94.1	90.8	89.7	90.7	461.9
Variance	(22.7)	(8.4)	0.1	0.4	(1.3)	(31.9)
Cumulative Variance	(22.7)	(31.0)	(30.9)	(30.6)	(31.9)	

Our Controllable Opex costs were £85.7m this year, £11.8m higher than the previous year. This brings our costs more in line with our business plan as activities and costs have normalised after the Covid-19 pandemic. We have also seen additional costs across Work Management, Emergency and Repair in order to meet the Health and Safety Executive 12 and 16 hour working standards requirements. We expect to outperform the 5-year Final Allowance (workload adjusted and including forecast RPEs) by £31.9m.

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#### Work Management and Work Execution

**Holder Demolition** and **Environmental Remediation** costs can vary materially by size, condition and other site factors. This year we demolished 10 holders, 5 more than last year and 5 higher than planned. This is purely phasing of work and results in lower expenditure for the remainder of RIIO-2, so overall expenditure remains in line with our plan. We spent in line with our Environmental Remediation plan this year, and expect work on these complex projects to increase over the later years of RIIO-2, so that overall we expect to complete our planned work over RIIO-2 in line with our planned costs.

We spent £0.1m more on **Asset Management** this year, £0.1m below the £2m assumed in our business plan. We expect to spend in line with our plan for the remainder of RIIO-2.

We spent £0.1m less on **System Control** this year, but expect costs to increase marginally to £0.7m over the remainder of RIIO-2. This is below our business plan forecast. We now flex the resource here to support other asset management activities to increase efficiency and maximise output.

Under our Totex operating model **Operations Management**, **Customer Management**, **Emergency** and **Repair** costs can all be affected by the relative level of workload across Opex, Capex and Repex. In Opex, the main workload drivers are the volume of Publicly Reported Escapes (PREs) and Repairs we see in the year.

Workload	19/20	20/21	21/22	22/23	23/24	24/25	25/26
Forecast PREs	90,529	89,869	89,234	88,626	88,041	87,480	86,942
Forecast Repairs	20,199	19,551	18,838	18,153	17,497	16,866	16,260
Actual PREs	74,948	70,115	67,770	69 <i>,</i> 945	-	-	-
Actual Repairs	17,317	17,794	19,482	20,658	-	-	-

Expenditure in **Emergency** and **Repair** has increased to  $\pm 27.2m$  this year compared to  $\pm 23.3m$  in 21/22.

**Emergency** costs increased as we recruited 17 engineers to improve resilience and to begin to meet the Health and Safety Executive 12 and 16 hour working standards requirements. PRE workload also increased in the year due to a severe weather event in the winter which resulted in a spike in PREs. However, volumes are still significantly lower than those seen before the Covid-19 pandemic.

**Repair** costs increased as we realigned resource from other areas where customer driven workload has fallen – connections, fuel poor and service alteration work. We used this resource to carry out more repairs and reduce the number of outstanding escapes. We also saw increased reinstatement costs, linked to both volume and complexity of the repairs carried out on these escapes. This was the major driver for the increase in repairs this year. We expect repairs to trend down over time as a result of the Repex programme, but not necessarily every year as other factors such as weather and asset performance will influence the overall workload.

Our forecasts for Emergency and Repair have increased since last year as we have included an early forecast of the extra resource, we will need to meet the Health and Safety Executive 12 and 16 hour working standards requirements. A re-opener submission for an increase in allowances to cover this will be made in January 2024. The forecasts are also based on a more prudent 'normal' winter workload. We would expect to outturn lower than this when weather is milder, but we cannot always assume this will be the case.

We spent £2.6m more on **Operations Management** this year. The main driver was an increase of £1.6m in payments associated with the Incremental Pensions Deficit. This was related to the deferred pensioner buy-in, as discussed with Ofgem in October 2022 and June 2023. Further details will be provided with the Reasonableness Review submission in August 2023. We also saw a £1.0m increase in staff costs, partially related to the increased Emergency and Repair workload discussed above, with the balance as a result of the increased maintenance workload discussed below. We expect expenditure to be marginally higher than previously forecast to support the increased maintenance workload.

We spent £0.1m less on **Customer Management** this year due to minor variances in net staff costs. We also continue to see fewer calls to the emergency number following the Covid-19 pandemic. We expect to spend in line with our plan for the remainder of RIIO-2, assuming a more 'normal' workload, particularly over winter.

We spent £2.3m more on **Maintenance** this year, a £3.9m increase since 2021. This is a significant increase but lower than we forecast in our business plan, where we outlined our strategy to increase maintenance in several areas. This included more work on District Governors to extend their operational life and reduce Capex, carry out in-line inspections using new technology on our 4" high pressure pipelines, and to install more Pressure Control systems which require increased maintenance. Accelerating this workload post the Covid-19 pandemic has proved more difficult than expected with long lead times for some

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equipment and scarcity of resource. We expect to accelerate this work over the next two years and fully catch up by the end of RIIO-2, spending just under our business plan target over the price control.

We spent £0.5m less on **Other Direct Activities** than forecast, the same as last year. Costs can vary year on year, largely driven by the number of district incidents we encounter and our success at recovering costs from 3<sup>rd</sup> parties if they caused the incident. Our plan was based on the long-term average costs for this activity.

#### **Business Support and Training and Apprentices**

We spent £1.0m more on **IT and Telecoms** this year as we had a contractual overlap of our geospatial data management providers as well as continuing to increase resource in our Cyber Security team. We expect to continue increasing resource in several areas to support our overall IT strategy in the next year, and expect costs overall to remain around £6.6m for the remainder of RIIO-2.

Our **property** costs have reduced by £0.5m this year due to rebates on utility bills as well as rationalisation of our offices. Costs are expected to reduce after 2023/24 for the remainder of RIIO-2 as we purchase our Thorpe Park Head Office, reducing our rental payments and associated fees.

Our **Human Resources** costs have increased by £0.1m this year as we are seeing increased costs for recruitment as staff turnover has continued to be above expected levels. We expect costs to remain at this level for the remainder of RIIO-2 as we continue to invest in wellbeing, hybrid working and talent development strategies, as well as expanding on our existing diversity and inclusion plans.

We spent £0.6m more on **Audit, Finance and Regulation** this year, mainly from the costs associated with the RIIO-2 CMA appeal and increased audit fees. We expect costs to marginally increase year on year from now as we begin to ramp up towards the development of our RIIO-3 business plan.

We spent an additional £0.7m this year on **Insurance** and claims due to employee liability payments. Claims have historically varied materially from year to year and are very difficult to predict. Our forecast remains at the long-term average.

Our **CEO and Group** costs reduced by £0.3m this year as we restructured elements of our senior leadership team. We are behind our plan the first two years but expect to catch up

next year, with costs then remaining broadly flat for the remainder of RIIO-2 as we progress our RIIO-3 plan.

**Procurement** costs are £0.1m less this year as the team have been focused on delivery of Capex and Repex programmes. We expect costs to realign with our plan for the remainder of RIIO-2.

#### 5.2.2 Non-Controllable Opex

Non-Controllable Opex (2018/19 prices)	21/22 Actuals	22/23 Actuals	<b>23/24</b> Forecast	<b>24/25</b> Forecast	25/26 Forecast	TOTAL Forecast
Shrinkage	7.9	15.4	8.6	9.8	7.4	49.1
Ofgem Licence	2.3	2.2	2.5	2.5	2.6	12.2
Network Rates	42.1	38.7	30.4	32.3	33.0	176.4
Pension Deficit	4.9	12.5	13.2	5.7	-	36.3
NTS Exit Costs	39.3	34.1	26.1	30.7	40.4	170.6
Xoserve	3.3	2.5	2.9	3.0	3.0	14.7
Other (inc. Supplier of Last Resort)	3.5	83.2	24.6	3.2	1.4	115.9
Total	103.4	188.5	108.4	87.2	87.8	575.3

By definition Non-Controllable costs are outside of the control of the GDN's. Costs are significantly higher than the level we forecast in our Business Plan. The main drivers are:

- Shrinkage gas costs are forecast to be 105% higher over the price control as a result of the increased cost of gas, driven by the Ukraine war and other economic factors.
- Supplier of Last Resort payments peak at £81.3m in 2022/23 and total over £103.0m over the price control. We did not include any costs for this in our Business Plan.
- Pension Deficit increases reflect the recovery of the cost of the buy-in of pensioner liabilities, as discussed with Ofgem in June 2023. Further details will be provided with the Reasonableness Review submission in August 2023.
- The Ofgem Licence has increased by nearly a third.

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#### 5.3 Capex

#### 5.3.1 Capex against the Allowance

Capex (2018/19 prices)	21/22	22/23	23/24	24/25	25/26	TOTAL
LTS, storage and entry	9.2	7.7	16.5	18.6	17.7	69.7
Connections	7.5	5.5	5.2	5.2	3.7	27.1
Reinforcement	4.7	4.9	4.8	4.5	4.6	23.6
Governors (ex. reinforcement)	0.3	1.7	1.6	1.9	2.3	7.7
Other Capex	18.5	19.7	28.0	26.4	27.5	120.1
Total	40.3	39.4	56.1	56.6	55.8	248.3
Final Allowance	52.8	58.0	54.5	51.1	45.5	262.0
Variance	(12.6)	(18.6)	1.6	5.5	10.4	(13.7)
Cumulative Variance	(12.6)	(31.2)	(29.6)	(24.1)	(13.7)	

Our Capex costs were £39.4m this year, £18.6m lower than the allowance. We expect costs and workload to increase so that we are more in line our Business Plan over the five years of GD2. We expect to outperform the final allowance (workload adjusted and including forecast RPEs) by £13.7m.

**LTS, Storage and Entry** costs were £7.7m, c£5.3m lower than Forecast. The main driver for this has been delays in starting work on some of the major projects associated with the Network Rail-driven TransPennine Electrification project. This is the largest area of expenditure on our LTS assets in RIIO-2 and is expected to involve work at 4 separate locations. NGN proposed this c£20m project should be a PCD as we are not driving the work, location or timing, and so the final costs are uncertain. Formal notification has been received from Network Rail, following a period of suspension, with delivery of the various diversions scheduled in 2024 and 2025. Further details are provided in section 6.3.3.

We have also experienced some delays with long lead items and a shortage of expert contractor resource, driven by general economic conditions. Despite this we expect costs to increase for LTS, Storage and Entry in line with our Business Plan, and to peak in 2024/25.

**Net Connections** costs were £5.5m this year, c£0.2m higher than forecast. Workload continued to fall with a 38% reduction compared to the previous year. Costs did not reduce in line with workload as complex Non-Domestic connections and stranded overhead costs resulted in increased unit costs.

Connections (2018/19 prices)	21/22	22/23	23/24	24/25	25/26	TOTAL
Allowed volume						
Domestic Services	5,462	5,802	6,137	6,468	2,174	26,043
Domestic Mains	27.0	30.3	33.5	36.8	3.2	130.8
Fuel Poor Services	-	-	-	-	-	2,154
Non-Domestic Services	512	517	522	526	530	2,608
Actual and Forecast volume						
Domestic Services	3,931	2,725	2,772	2,785	1,217	13,430
Domestic Mains	17.1	14.9	13.4	13.4	5.9	64.7
Fuel Poor Services	854	185	185	185	185	1,594
Non-Domestic Services	405	282	279	273	268	1,506
Actual & Forecast cost/allow						
Total Connections Net Costs	7.5	5.5	5.2	5.2	3.7	27.1
Total Connections Allowances	8.0	5.7	5.7	5.8	3.8	28.9
Allowance Variances						
Domestic Mains & Services	(0.1)	(0.2)	(0.2)	(0.3)	0.3	(0.5)
Fuel Poor Mains & Services	0.2	0.3	(0.0)	(0.0)	(0.1)	0.4
Non-Domestic / Govs.	(0.7)	(0.2)	(0.2)	(0.2)	(0.3)	(1.6)
Variance	(0.6)	(0.1)	(0.4)	(0.6)	(0.1)	(1.8)
Cumulative Variance	(0.6)	(0.7)	(1.1)	(1.7)	(1.8)	

#### **Connections workload**

Domestic and Non-Domestic workload was c53% lower than our allowed workload. All workloads reduced during the Covid-19 pandemic and have not returned to the levels seen in the latter years of RIIO-1 which drove our business plan forecasts and the allowed workload.

Actual workload in 2022/23 has reduced by 31% compared to the previous year, likely driven by the cost-of-living crisis, high energy prices, and general economic conditions. Given these conditions are expected to continue for some time, our forecast is based on the workload trend we are seeing now which is c48% lower than the allowed workload in RIIO-2. We expect to see new to new domestic connections stop in 2025/26 as a result of government policy preventing the installation of new gas boilers in new properties.

Fuel poor workload was also lower than planned, 185 compared to our original Business Plan annual target of 1,000. Ofgem's definition of fuel poverty and the removal of areabased qualifications makes it much harder to qualify for a fuel poor connection now. We

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have adjusted our forecast to reflect the significant reduced volume of work expected in RIIO-2 to 1,594 connections – a 62% reduction vs. Business Plan.

#### **Connections allowance and costs**

Costs were £0.1m below allowance this year and £0.2m higher than forecast despite reduced workload. c£4.3m (51%) of our gross connections and fuel poor costs were overhead related in 2022/23 compared to £5.1m (46%) in 2021/22. Despite this reduction in total overhead costs, the value of overhead has increased as a proportion of our unit costs. This is due to stranded costs from our Connections design, planning, delivery and customer teams as they can't be scaled in-line with periodic fluctuations in work demand whilst maintaining high levels of GSOS and customer experience performance.

We are forecasting to outperform allowances every year of RIIO-2 with a total outperformance of 6% across the full period. Cost pressures are still present across materials, reinstatement and plant hire which are off-set by reduced non-domestic work that is not volume driven.

**Mains reinforcement** costs were £4.3m this year. We delivered 15.2km of mains at a unit cost of c£280 per metre, a reduction from £488 per metre in 2021/22. This reduction in unit rates has been driven by a large multi-year project in Pocklington. During 2021/22 we carried out significant preparatory works but no recorded workload, which drove the relatively high unit rate of £488 per metre. We are now commissioning the pipe and recording all the workload which has driven the relatively low unit rate in 2022/23.

In our business plan we did highlight the risk volumes could increase significantly due to improving economic conditions and increasing demand for electricity peaking plant. Much of this workload is third party driven. We are now seeing an increase in demand compared to last year, which has led to an increase in our forecast workload over the price control. We now expect this to be more in-line with our business plan.

**Replacement governor** costs were £1.7m this year, c£1.2m above forecast, which is also reflected in the workload delivered – 78 district governor projects were completed compared to 3 in 2021/22. We have successfully increased internal and external resource in this area on the back of a new commercial framework and expect to deliver the planned Business Plan volumes over the price control.

**Other Capex** costs were £19.7m this year, c£1m below forecast. The main drivers for this underspend were:

- c£1.7m lower expenditure on **Vehicles** than planned. This is down to timing and reflects the continued impact that the worldwide semi-conductor shortages have had on increased lead times for all types of vehicles. We are reviewing how this will impact total expenditure over RIIO-2.
- Security expenditure has increased by cf1.8m this year following our electronic lock programme to improve security across network above ground assets.
- c£3m lower expenditure on Pipelines and Electrical and Mechanical instrumentation. We have experienced contractor resourcing issues on our overcrossings and river bed erosion projects, and delays in trialling and rolling out a Long Range Wide Area Network (LoRaWAN) communications platform.

We expect costs to increase in future years to be more in line with our business plan as we recover the positions outlined above. We do expect to see some cost pressures on vehicles in particular, and on areas such as electrical equipment, plant, tools and equipment materialise, which could lead to expenditure exceeding our business plan forecast.

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#### 5.4 Repex

#### 5.4.1 Costs and allowances

Repex Costs (2018/19 prices)	21/22 Actuals	22/23 Actuals	23/24 Forecast	24/25 Forecast	25/26 Forecast	TOTAL Forecast
Tier-1 - Mains	52.9	53.1	56.4	57.4	51.9	271.6
Tier 1 - Services	9.4	8.8	9.0	8.9	8.0	44.1
Tier-2A Mains and Services	1.6	2.4	2.6	2.5	2.5	11.7
Tier-2B Mains and Services	6.1	6.9	8.1	8.0	8.0	37.1
Tier-3 Mains and Services	3.4	3.4	3.5	3.5	3.5	17.3
<=2" Steel Mains and Services	6.6	4.7	5.2	5.2	5.1	26.7
>2" Steel Mains and Services	4.6	4.6	6.4	6.4	6.3	28.4
>30m Mains	1.4	1.0	1.6	1.6	1.6	7.2
Other Mains and Services	0.2	1.8	0.7	0.7	0.7	4.1
Diversions Mains and Services	7.3	1.9	2.3	2.2	2.2	15.9
Other Services (not mains assoc.)	6.1	5.2	4.7	4.7	4.7	25.4
Tier 1 Stubs	1.1	1.9	2.4	2.4	2.4	10.3
Risers	0.0	0.1	0.1	0.1	0.1	0.3
Total	100.7	95.8	103.0	103.7	97.0	500.2
Allowance	105.3	102.5	94.1	94.1	94.6	490.5
Variance	(4.6)	(6.7)	8.9	9.6	2.5	9.7
Cumulative Variance	(4.6)	(11.2)	(2.3)	7.2	9.7	

Our Repex costs were £95.8m this year, £6.7m lower than the allowance. The main driver for this was lower than expected costs for Tier 1 Stubs, which are subject to a re-opener mechanism. Ofgem provided allowances for the first two years of RIIO-2 for Tier 1 Stubs as the HSE policy was under review at the time, and so the volume and timing of work was uncertain.

It is now clear under HSE policy that many Tier 1 stubs still need replacing, and so our cost forecast takes this into account for all RIIO-2 years. This is one of the drivers for the allowance outperformance reducing in later years, as we have included costs with no associated allowance. We expect to re-open Tier 1 Stubs to review progress to date and our plans for the rest of RIIO-2 to ensure we can deliver the required work by the end of the Repex programme.

The other driver for spending less than the allowance was a marginally reduced workload across Tiers 1, 2b, 3 and Steel mains. The primary reason was a severe weather event we experienced in December 2022. We are also experiencing ongoing resource retention issues linked with competing utilities and increasing remuneration demands. Despite this we have delivered 99.2% of our targeted workload over the first two years of RIIO-2. We plan to deliver an additional 20km of mains abandonment in each of the next two years to ensure we are ahead of the required run rate by the end of the fourth year of the price control.

We now expect repex unit rates to increase marginally throughout RIIO-2. We have seen some marginal increases in the latest year as a result of increases in costs for materials, plant, wages and fuel. We are still targeting to deliver efficiencies across our Repex delivery model over the remainder of RIIO-2, but we expect these to be more than offset by cost pressures as the work becomes more complex towards the end of the programme. As a result we are now forecasting to overspend against our RIIO-2 allowances by £9.7m, which is a £28m swing from last years forecast. The Real Price Effects element of the allowance has reduced by c£14.4m, and our forecast costs have increased by c£13.6m.

Mains Workload (km)	21/22	22/23	23/24	24/25	25/26	TOTAL	ALLOWED
Tier 1	437.4	430.4	457.3	457.3	404.5	2,186.8	2,144.3
Tier 2a	3.2	1.6	1.8	1.8	1.8	10.1	10.1
Tier 2b	19.1	17.7	21.7	21.7	21.7	102.0	102.0
Tier 3	5.3	5.4	5.8	5.8	5.8	28.1	22.7
Iron Mains (ex. >30m)	464.9	455.0	486.6	486.6	433.8	2,327.0	2,279.2
Steel <2"	45.4	33.0	46.8	46.8	46.8	218.9	218.9
Other	35.8	31.0	41.9	41.9	41.9	192.4	189.8
Diversions	11.1	9.4	11.6	11.6	11.6	55.5	56.6
Total	557.3	528.4	579.1	579.1	526.3	2,793.7	2,744.4

#### 5.4.2 Mains Workload

This year we have delivered a total of 528.4km of mains abandonment.

The **Tier 1 Mains** target is 2,144.3km over RIIO-2, or 428.9km per annum. Over RIIO-2 we plan on delivering 2,186.8km, or 437.4km per annum. This is an increase of 8.5km each year and 42.5km over the 5 years. This will allow us to recover the Covid-19 related shortfall of workload seen in the final year of RIIO-1 by the end of the Repex programme in 2032. This increased workload will be funded under the Tier 1 Mains volume driver. **Tier 2a Mains** are

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also subject to a volume driver as the workload is very difficult to predict. We expect to deliver 10.1km over RIIO-2.

This year we abandoned 430.4km of **Tier 1 Mains**, 7km below our annual target. The primary reason was a severe weather event we experienced in December 2022, during which we re-focused resources to ensure we delivered the key 1 and 2 hour Emergency Response safety standards.

We are also experiencing ongoing resource retention issues linked with competing utilities and increasing remuneration demands. As a result we are slightly behind the planned run rate for **Tier 2b and Tier 3 Mains,** as well as **>2" Steel**. We fully expect to deliver the allowed workload for all these activities by the end of RIIO-2.

We expect to deliver broadly in line with the allowed **<2"** Steel mains workload over the price control. Volumes are likely to vary year on year as the majority of this mains type is replaced when we find it whilst replacing Tier 1 iron mains. As Tier 1 mains volumes increase as described above, there is a possibility for this workload to increase as well. **Other Mains** and **Diversions** work is difficult to predict, as the former includes poor performing PE and Asbestos, which we replace when it's found, and the latter is third party driven. We expect to deliver the allowed workload over RIIO-2.

#### 5.4.3 22/23 year-on-year performance

Year on Year Performance (2018/19 prices)		22/23		19/20	20/21	21/22
	Net Cost	Workload	Unit Cost	Unit Cost	Unit Cost	Unit Cost
Tier 1 and <2" Steel	56.8	451.7	126	107	142	122
Tier 2a	2.4	2.3	1056	356	538	510
Other	17.4	48.7	357	350	432	258
Diversions	1.8	9.4	192	283	79	700
Total Mains laid	78.3	512.0	153	135	191	150
Tier 1 and <2" Steel	9.8	32,022	306	306	299	312
Tier 2a	0.0	10	299	331	266	312
Other	0.4	1,262	303	307	291	322
Diversions	0.1	418	307	346	340	312
Other Services	5.2	6,245	829	1457	1252	1091
Total Services	15.5	39,957	387	462	509	413
All-in Mains cost	93.8		183	171	220	182

In terms of year-on-year performance, unit costs have marginally increased from 2021/22, with the all-in mains cost increasing from £182 per metre to £183 per metre. We have seen an increase since 2019/20, a pre-COVID comparable year, from £171 to £183 per metre.

This is mainly driven by Tier 1 and <2" steel mains and the associated services, which on a combined basis have increased by c14% from c£129 per metre to £147 per metre. There are several factors behind this increase in costs:

- We have seen an increase in the proportion of mains that needs to be open cut rather than inserted since we submitted our business plan in 2018/19. Services that need to be open cut have also seen an increase.
- As outlined in our Business Plan, the proportion of ductile iron in the workload has increased across all tiers and continues to do so in RIIO-2 with 36% of 2022/23 Tier 1 Mains decommissioning being Ductile Iron (29% in 2021/22). This type of main is more difficult and time consuming to work on.
- We are also seeing the average project length decrease over time as we inevitably begin to pick up smaller pipe lengths to complete particular geographic locations.
- As referenced, we are also seeing the costs of labour, materials, plant, reinstatement and changes to fuel legislation impacting delivery costs.

We expect these cost pressures and others to continue to increase from now until the end of the Repex programme. We are looking to develop a fuller picture on this to better understand how costs and workload can be best managed to deliver the most efficient mix of work over time.

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# 6 Outputs and Incentives

# 6.1 Introduction

The adoption of an output and incentive-based framework is a key element of the RIIO regulatory contract. By defining the outputs companies need to deliver and any incentives or penalties they will receive for over or under-performance, as well as setting cost allowances, companies are incentivised to innovate and deliver the services that customers require at the least cost. An outputs-based framework also provides greater transparency for customers and the networks as to what services and standards the networks need to deliver.

Outputs for RIIO-2 are grouped into three consumer-facing output categories, as set out below:



Network companies must deliver a high quality and reliable service to all network users and consumers, including those in vulnerable situations

Network companies must deliver a safe and resilient network that is efficient and responsive to change

Network companies must enable the transition towards a smart, flexible, low cost and low carbon energy system for all consumers and network users.

There are three potential types of output, depending on what the ultimate aim of the output is. Some outputs fit into more than one type.

**Price Control Deliverables** (PCDs) specify the deliverables for the funding allocated, and the mechanisms to refund consumers if an output is not delivered (or not delivered to a specified standard). Their purpose is to hold the networks to account for delivering work that has been funded through the expenditure allowances, and that they are only paid for what they deliver.

**Licence Obligations** (LOs) set minimum standards that network companies must achieve. Failure to deliver to these standards means the network is in breach of the licence and can receive a material fine and further sanctions.

**Output Delivery Incentives** (ODIs) drive service improvement through Reputational and Financial incentives. Network performance will either be rewarded or penalised financially or by reputation when compared against their own targets and those of the other companies.

# 6.2 Meeting the needs of consumers and network users

#### 6.2.1 Consumer Vulnerability and Carbon Monoxide

Ofgem have introduced three outputs related to consumer vulnerability and carbon monoxide.

- The **Consumer vulnerability minimum standards** (LO) which aims to retain and improve in some cases on the existing standards in a new Licence Obligation.
- The **Consumer Vulnerability reputational incentive** (ODI-R) aims to ensure there is focus on three key themes and six key metrics related to vulnerability and carbon monoxide (CO) awareness. This will ensure comparison and knowledge sharing between the gas networks.
- The Vulnerability and Carbon Monoxide (CO) allowance is to allow the gas networks to provide bespoke services to support consumers in vulnerable situations and raise awareness of the dangers of CO. It takes the form of a Use-it-or-Lose-it Allowance. NGN has received an increased allowance of £19.7m over the price control (2018/19 prices) following a recent Ofgem decision to repurpose some of the Fuel Poor Network Extension Scheme allowance towards VCMA projects.

#### 6.2.2 Consumer vulnerability reputational incentive

In 2022/23 we have continued to focus on engaging both colleagues and community partners in understanding the importance of the areas targeted under this incentive, and to make sure we have effective delivery and recording mechanisms in place. We have broadened our embedded engagement mechanisms to include an annual NGN Open Day and VCMA Showcase event, as well as using stakeholder feedback to guide and shape our approach. For example, we regularly heard that we should be proving immediate support to the cost of living crisis, and this led to a number of large VCMA projects, both within the

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NGN region and collaboratively, to support customers in the here and now. We have done this alongside continuing with our strategic approach of trying to identify projects that can be self-sustaining beyond the end of VCMA funding. The table below outlines the headline results for the 6 key Ofgem metrics, with some additional reporting on the number of customers referred to the Priority Services Register (PSR), and the % increase in Carbon Monoxide awareness using the commonly agreed survey.

Key Performance Indicator	22/23
Customers reached through Carbon Monoxide (CO) awareness initiatives	
<ul> <li>using agreed 3% proportion of overall awareness research (customers</li> </ul>	803,186
likely to take actions as a result of the increased awareness)	
Number of CO awareness visits / surveys with customers	17,966
Average score before awareness visit	6.28/10
Average score after visit	7.71/10
Average increase in awareness from visit	33%
Number of customers referred onto the Priority Services Register (PSR)	8,925
Average customer satisfaction score for PSR customers directly impacted	9.32/10
by NGN	
Number of Fuel Poor Network Extension Scheme Connections	185

During 2022/23 the GDNs agreed to have a consistent approach to reporting CO awareness 'reach'. For 2022/23 RRP this is based on reducing the overall reach to 3%, as this is the % likely to take action as a result of increased awareness. Through 2023/24 we will be refining the approach further to establish % by channel rather than applying a blanket 3% to all channels. For comparison to the figure provided in 2021/22 RRP, NGN overall awareness research for 2022/23 is 26,597,013.

Here are some specific actions that we have taken to help deliver these results.

#### Using research to inform our approach

Each year we conduct PSR/CO awareness research with 1000+ domestic and business customers. This data was shared with stakeholders and overlaid with VCMA funded projects and our social indicator mapping. We have used these findings to inform where to target our awareness programmes, including our annual multi-media PSR and CO awareness campaign.

In the 2022 PSR/CO awareness research, awareness of carbon monoxide had increased between 2021 and 2022, from 48% to 57%. More participants in 2022 recalled specific

campaigns that raised awareness of CO. When it comes to owning a CO alarm, there has been a shift from "don't have one" to "don't know if I have one" and "have one but can't remember what type".

More customers in 2022 reported being on the PSR – now 24%, compared to just 15% in 2021. As a result of this research and working with our partners, it is clear that the messages around CO and PSR are being effectively cascaded and consequently delivering significant benefits.

This increase is supported by our door-step awareness sessions through our front-line engineers. In 2021/22, starting awareness before our intervention was 5.88/10, and in 2022/23 was 6.28/10.

#### Providing additional support through the cost of living crisis.

As well as shifting our focus for the VCMA funded projects to respond swiftly and effectively to the cost of living crisis, we also took the step during 2022/23 to increase the NGN Customer Support Fund from £150,000 to £600,000. This was to make sure we could plug any funding gaps for our customers in most need, and provide flexibility to the services that we already have in place. Here are some examples of the projects we have funded during 2022/23 that have provided immediate relief to customers in financial crisis:

- VCMA One-Number Project. Cadent-led with NGN, providing customers with support for repair and replacement of gas appliances.
- Customer Support Fund Foundation Independent Living Trust. Increased funding for repair/replacement of appliances not covered by VCMA funding i.e. for customers not directly impacted by an emergency unplanned interruption.
- VCMA Fuel Bank Foundation. SGN-led with all GDNs. Providing customers with emergency fuel vouchers through partner referral network.
- NGN Customer Support Fund Heat the person support items. Providing customers with heated blankets, heated jackets, and heated chair covers, to help provide affordable warmth through the winter months.
- NGN Customer Support Fund additional GSOP payment. Payment introduced at 4 hours on an unplanned gas interruption, following customer feedback that due to increased energy costs, affordability to run electrical alternatives was a key issue.
- NGN Customer Support Fund Fuel Bank Foundation. Providing customers with emergency fuel vouchers through referral from NGN front-line engineers.

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#### 6.2.3 Vulnerability and carbon monoxide allowance

Over 22/23 we have a sustained and ever-increasing focus on helping customers and communities in financial crisis as a result of the cost of living crisis. We have engaged regularly with our community and strategic partners to guide our approach and co-design the right support solutions. Here are the key headlines:

- We increased our level of spend in 2022/23 in line with stakeholder feedback, and the growing need for immediate, crisis support.
- We are forecasting to spend the original full allowance by the end of March 2026. Of the forecast spend over the next three years, we only have c£800k that hasn't been allocated to a specific NGN/collaborative project. This will be used to focus on CO specific projects from year 3 onwards. We have also developed a strategy for how we can best spend the majority of our increased £19.67m VMCA allowance in line with the revised VCMA guidance for the reallocated FPNES Allowance.
- We have ensured that collaborative spend delivers value to customers, specifically within the NGN region. Collaborative spend at the end of year two is 49% of our overall allowance this is supported by our regional stakeholders. It's important to note that collaborative spend can deliver greater efficiencies in project delivery, and ultimately improve the outcome for customers. For example, the One Number project is a Cadent-led collaborative project, delivering gas appliance repair/replacement services to customers impacted by an unplanned gas interruption. For the other GDNs, this work has been undertaken by the individual GDN, and will therefore be noted as GDN rather than collaborative spend.
- We have addressed geographical and needs gaps in funding that were identified in year 1 – we are now funding projects within West Yorkshire (geographical gap) and have launched an SGN-led collaborative partnership with Scope (addressing physical needs gap), as well as extending our network of regional partners to include more focus on physical health. The case study below describes one of our regional VCMA projects which is focussing specifically on physical health.

#### Case Study

#### Durham County Council – GP Partnering Pilot

As County Durham has lots of ex-mining communities there is a prevalence of respiratory problems associated with this. Living in a cold home can significantly compound these

existing health issues. The targeting of GP patients was done by working with Clinical Commissioning Group partners and targeted mail-outs to patients.

The GP Partnering pilot also targeted local communities with vulnerable and low-income households, for assistance for grants and services to help support those who may be in fuel poverty. This included raising awareness of the dangers and health risks of CO and increasing applications to the Priority Services Register (PSR).

The overall aim of the project was to reduce the number of individuals with a long-term health condition who are living in fuel poverty within County Durham. By working with health professionals and accessing environments with key customer touchpoints, it will ensure that vulnerable households are safe, warm and have a sense of well-being.

#### 6.2.4 Fuel Poor Network Extension Scheme (ODI-R) (Capped Volume Driver)

Outputs	21/22	22/23	23/24	24/25	25/26	TOTAL	Сар	Variance
Fuel Poor	854	185	185	185	185	1,594	2,154	(560)

The purpose of the Fuel Poor Network Extension Scheme (FPNES) is to help tackle fuel poverty by supporting off-grid, fuel poor households to connect to the gas network.

Our updated cap is to connect a maximum of 2,154 fuel poor households in RIIO-2. This is subject to a volume driver to ensure we only get paid for the number of connections we deliver up to this volume.

In 2022/23 we delivered 185 FPNES connections, compared to 854 in 2021/22. Following removal of funding for in-house measures via ECO 4, and despite a continued and strengthened focus on trying to find eligible customers and schemes, it has been challenging to find alternative funding for in-house measures. As such, and given the significant drop in the number of FPNES connections across all GDNs, through 2022/23 Ofgem has been reviewing the FPNES. Following extensive engagement it has been decided that the FPNES will remain open, but with a reduced amount of funding available, based on reforecast FPNES connections for RIIO-2. The remaining unspent allowance will be reallocated under VCMA - for NGN this is c £12.8m. We have developed a strategy for what this additional funding will be targeted towards, in line with revised VCMA guidance agreed between Ofgem and the GDNs.

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#### 6.2.5 Customer Satisfaction Surveys (ODI-F)

Outputs	21/22	22/23	23/24	24/25	25/26	Average
Unplanned Work	9.54	9.62	9.62	9.62	9.62	9.57
Planned Work	9.09	9.06	9.09	9.13	9.13	9.12
Connections	8.96	9.13	9.13	99.13	9.16	9.06
TOTAL	9.20	9.27	9.26	9.27	9.29	9.25
Incentive (£m 2018/19 prices)	1.4	1.6	1.7	1.8	1.8	1.6

The purpose of the Customer Satisfaction Survey (CSS) is to ensure GDNs maintain good customer service and reward GDNs that deliver exceptional performance. The CSS itself involves interviewing customers based on three types of interaction that they have had with the network – connections, unplanned interruptions, and planned interruptions.

Ofgem has set separate targets and rewards/penalties for each type of interaction, with each category weighted equally. Each category also has a deadband within which no reward/penalty is applied. The overall reward/penalty is capped at 0.5% of Base Revenue. This is summarised in the table below.

Survey	Weight	Max Penalty Score	Penalty Score	Reward Score	Max Reward Score
Connections	33.33%	7.43	8.11	8.65	9.33
Planned Work	33.33%	7.90	8.34	8.69	9.13
Unplanned Work	33.33%	8.85	9.00	9.43	9.58

This year we achieved an overall score of 9.27. This exceeded our internal forecast of 9.24 and demonstrates sustained and continual improvement from RIIO-1.

We have continued to build on the relaunch of our NGN Custome Experience Strategy, and over the last 12 months have developed and embedded an internal customer service colleague charter, and we as developing a Customer Competency Framework, following the principles of the NGN Vulnerability Competency Framework.

We continue to drive improvements through our local and regional customer groups, making sure that they are led from within the business. The network-wide customer improvement group looks at more strategic improvements, and reviews any signification

changes to process, people or technology that we are looking to introduce to improve customer experience.

Specifically in 2022/23, as well as continuing to make improvements across all service delivery areas, we focussed attention on our lowest performing area of customer satisfaction – new connections.

We've undertaken a wholesale review of our customer literature, refreshing all our written literature, website and portal to remove jargon and make the information easier to understand at every point in the customer journey. We've also implemented introduction and close the loop calls for all customers to make sure customers are fully informed.

At the same time, we've implemented a range of improved customer processes to provide a more flexible and digital experience. This includes:

- The launch of our new customer portal aiming to improve our connections application process and allowing customer to track their project. Already we have seen an improvement in the time it takes to provide quotes to customers, with most being delivered within a day.
- Daily monitoring of customer acceptance of quote, allowing a faster turnaround of new orders through to the planning team.
- Reviewed our quote and pricing to offer more options to customer upfront, including options to self-dig to reduce costs.
- Trialled a fast-track alteration process for customers and are now looking at ways to implement that across the network

As a result of these key developments across different customer touchpoints, our connections score has improved from 8.96 in 2021/22 to 9.13 in 2022/23.

Finally, we are looking ahead to what our future customers will want and need from us. We engaged with the NGN Young Innovators Council to discuss what is important to them when dealing with different organisations, and what NGN will need to consider across the different customer touchpoints on the three core business service areas – unplanned interruptions, planned interruptions, and new connections.

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# 6.2.6 Complaints metric (ODI-F)

The purpose of the Complaints Metric is to ensure that GDNs maintain good performance in their handling of complaints. The metric is a composite score calculated as the sum of each GDN's performance against four weighted indicators outlined in the table below. The lower the score, the better the GDN is at resolving complaints.

Indicator	Weighting
Percentage of complaints unresolved after one working day (1WD) of receipt	10%
Percentage of complaints unresolved after 31 working days (31WD) of receipt	30%
Percentage of repeat complaints	50%
Percentage of Energy Ombudsman findings against the GDN	10%

The complaints metric has stayed the same as RIIO-1, but the threshold for penalty has reduced from 11.57 in RIIO-1 to 5 in RIIO-2. This year we achieved a score of 1.8, which is a significant improvement from 2021/22.

Outputs	21/22	22/23	23/24	24/25	25/26	Average
Complaints Metric	2.8	1.8	-	-	-	-
Target	5.0	5.0	5.0	5.0	5.0	5.0
Penalty (£m 2018/19 prices)	-	-	-	-	-	-

This year we targeted both a reduction in complaints as well as a strong performance against the complaints metric. Complaints have significantly reduced from 1,517 in 2021/22 to 1,168 in 2022/23. In parallel to this, we have improved performance across the key timebound measures within the complaints metric, achieving 85.51% closure in D+1 (78.12% in 2021/22) and 98.8% closure in D+31 (98.22% in 2021/22). Also, for the first year since the complaints metric was introduced in 2013, we received zero repeat complaints, underlining how closely we monitor the quality of complaints resolution. Finally, and consistent with 2021/22 performance, and RIIO-1 performance, we received no ombudsman findings against NGN.

Our focus on driving performance around preventing complaints, and improving the quality and timeliness of closure when we do receive a complaint has been achieved by:

- Reworking the twice weekly network customer satisfaction and complaints call, to a
  weekly patch-based call. This change was driven by the 5 network operation leads, who
  said that they would value more time to talk in-depth about their local performance.
  Any key themes are then discussed at a monthly network-wide call, which focuses
  entirely on the positive aspects of performance, and allows space and time to discuss
  complaints handling initiatives and learning.
- Daily management information is issued across the business to highlight performance against the 4 key metrics.

#### 6.2.7 Guaranteed Standards of Performance (GSOPs)

GSOPs	21/22	22/23	23/24	24/25	25/26
Paid Out	£0.68m	£0.42m	-	-	-

GSOPs set common minimum performance standards for GDNs across the service areas of interruptions to supply, gas connections and customer service. If the GSOPs are not met, NGN must pay compensation to customers. There are 14 GSOPs that NGN must monitor and report performance against in RIIO-2, consistent with RIIO-1.

The GSOPs regime has changed materially from RIIO-1 to RIIO-2 with many of the standards seeing reduced timescales, increased payment values and proactive rather than reactive payments. We supported this approach in our business plan. The change has impacted processes within NGN and Xoserve and the response has been positive with the intended improved outcomes for customers. In total, payments fell from £0.68m in 2021/22 to £0.42m in 2022/23, reflecting improvements to our standards of performance.

#### 6.2.8 Emergency response time (LO)

Outputs	21/22	22/23	23/24	24/25	25/26
One Hour Response	99.75%	99.55%	-	-	-
Two Hour Response	99.95%	99.69%	-	-	-
Target	97%	97%	97%	97%	97%

The purpose of the emergency response time licence obligation is to ensure GDNs respond to 97% of reported gas escapes within one hour when they are uncontrolled, and within two hours when they are controlled. Performance against both these targets can be adversely affected by large incidents or very severe winter weather conditions.

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This year we achieved 99.55% and 99.69% for our one-hour and two-hour response respectively. Achieving this standard is a core target for our network and receives day to day focus from our operational teams, in particular in the key winter periods.

#### 6.2.9 Unplanned interruptions (ODI-F)

Outputs	21/22	22/23	23/24	24/25	25/26
Actual	5 hours	5.58 hours	-	-	-
Minimum Performance Level	10 hours				
Excessive Deterioration Level	17.5 hours				

The purpose of the unplanned interruptions financial output delivery incentive is to ensure that GDNs manage the duration of these interruptions appropriately and performance does not deteriorate. An unplanned interruption is one where no prior notification has been given to the customer. These are typically caused by problems with the network assets (upstream of the ECV), damage to assets by third parties, and water ingress.

The incentive is penalty only, with a collar of 0.5% of Base Revenue. Each GDN has an individual Minimum Performance Level (MPL), representing the point at which a penalty will be incurred, and an Excessive Deterioration Level (EDL), where the maximum penalty will be incurred. The penalty will increase linearly between these two levels.

This year our average duration was 5.58 hours for 11,590 interruptions, which compares favourably to the RIIO-1 average of 6.6 for 12,488 interruptions. The duration of interruptions is very dependent on factors such as location, ground conditions, and extreme weather conditions.

# 6.2.10 Data Best Practice and our Digitalisation Strategy and Action Plan (LO)

The purpose of the **Data Best Practice** licence obligation is to ensure the delivery of a digitalised energy system that will maximise the value of data for consumers. Ofgem own and publish a Data Best Practice Guidance document which defines the data that we must comply with, and then details a principles-based compliance approach. This document was published on November 15th, 2021, and has been adopted by NGN. As active members of the Data and Digitalisation Steering Group (DDSG) representing energy distribution and transmission companies, NGN have engaged with Ofgem, BEIS (at the time) and other key stakeholders to help shape the guidance and to promote its consistent application. NGN chairs a sub-group of the DDSG on Data Interoperability.

The purpose of the **Digitalisation Strategy and Action Plan** (DSAP) licence obligation is to ensure GDNs work to make better use of Energy System Data and digital technologies to generate value for customers and stakeholders. This could include delivering a more efficiently planned, maintained and operated energy system, with users having greater information and insight.

Under the licence obligation GDNs are required to publish and seek feedback on:

- An updated Digitalisation Strategy at least once every two years.
- An updated Digitalisation Action Plan at least once every six months.

NGN's latest Action Plan can be found using the link below:

https://www.northerngasnetworks.co.uk/previous-plan/the-future/digitalisation-strategy/

#### 6.3 Maintain a safe and resilient network

#### 6.3.1 Repex - tier 1 Mains and Services (PCD)

Outputs	21/22	22/23	23/24	24/25	25/26	Total	Target
Mains	437.4	430.4	457.3	457.3	404.5	2,186.8	2144.3
Services	30,220	28,688	30,495	30,495	30,494	150,392	147,469

The purpose of the Tier 1 mains and Tier 1 services PCDs is to fund the workload delivered under the Tier 1 replacement programme. Both PCDs contain an Allowance Adjustment Mechanism that ensures consumers only fund the volume and mix of work delivered, subject to an upward cap to limit the amount of any over delivery.

Over RIIO-2 we plan on delivering an average of 437.4km of Tier 1 mains per year in the same workload mix contained within our Business Plan. This is an increase of 8.5km each year and 42.5km over the 5 years. It will allow us to recover the Covid-19 related shortfall of workload seen in the final year of RIIO-1 by the end of the Repex programme in 2032. This is below the 3% cap for mains workload and is therefore funded through allowances.

This increase in mains also drives an increase in services, where we expect to deliver 2,923 extra over the 5 years, 585 per year. This is below the 10% cap for services.

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#### 6.3.2 Gas holder demolitions (PCD)

Outputs	21/22	22/23	23/24	24/25	25/26	Total
Actual	5	10	-	-	-	15
Target	5	5	5	5	3	23
Cumulative Out / (Under)	0	5	-	-	-	5

The purpose of the Gas Holder Demolition PCD is to fund the removal and decommissioning of gas holders. These assets are no longer required to operate the network and present a safety risk and require maintaining whilst still in situ. If we do not complete all targeted 23 holders in RIIO-2 then our allowance reduces by a set unit cost.

This year we successfully demolished 10 holders, ahead of our business plan target. We remain on track to complete the programme in RIIO-2.

#### 6.3.3 Capital Projects Price Control Deliverable (PCD)

The purpose of the Capital Projects PCD is to hold the networks to account for the delivery of specifically funded capital investments. NGN has two such projects, discussed below.

**TransPennine Rail Electrification** – this is the largest area of expenditure on our LTS assets in RIIO-2 and is expected to involve work at 4 separate locations. NGN proposed this project should be a PCD as we are not driving the work, location or timing, and so the final costs are uncertain.

The LTS asset diversions required as part of the Network Rail Trans-Pennine Upgrade (TRU) project are at varying stages due to the progress of each respective scheme (East and West).

The TRU West Scheme works have been reduced from three to two diversions through the implementation of a plant protection solution at Ravensthorpe which is currently being designed. This will represent a significant cost saving due to the scope of works that would have been necessary to complete a full diversion and secure the additional land that would have been required to safely undertake the works. Detailed design is progressing on the remaining diversions at Heaton Junction, with an expectation for works to commence and be completed in 2024.

The TRU East diversions did not commence in 2022/23 but formal notification was received and engagement recommenced with Network Rail. The TRU East Scheme at Ridge Road was originally designed in RIIO-1, however the scheme was subsequently suspended until 2022.

This scheme design is to now be revalidated along with a new detailed design for the Austhorpe Lane Scheme, both in 2023. It is forecast that these schemes will be delivered by the end of 2025 and 2024 respectively.

All of these schemes are still subject to the requirements of Network Rail, and any repeat changes to their scheme could result in suspension or cancellation of the works.

**Overcrossings** – we build these assets when our below-ground pipes cross natural or manmade obstacles such as rivers, canals, road and railways. We have a total population of 352. If an overcrossing fails, we risk an explosion, loss of supply, and methane leakage. There is also a security risk should a member of the public access the site and fall from the pipework – such an incident happened in RIIO-1.

Under this PCD we have a target to deliver 45 condition upgrades and 63 security upgrades for £8.3m over RIIO-2. This year we have delivered 5 condition upgrades and 12 security upgrades for £0.74m. The upgrade unit costs are relatively low compared to the allowed unit cost of c£80k. However, unit costs can vary significantly for this type of work due to the complexity of the overcrossing (i.e. stream / ditch projects versus wider rivers / canals or rail projects). More complex projects are programmed for later years of RIIO-2, where we expect unit costs to exceed allowances. We expect workload to peak in year 4 of the price control, with workload reducing in the final year.

#### 6.3.4 Cyber resilience IT and OT (PCD and Use it or Lose it Allowance)

The purpose of the Cyber Resilience Information Technology (IT) and Operational Technology (OT) PCD and Use it or Lose it (UIOLI) allowance is to support NGN in managing risks associated with the security of its information and operational technology. The funding seeks to:

- Reduce the likelihood of security incidents occurring.
- Minimise the impact of security incidents that have occurred.
- Improve the continuity of gas distribution services whilst operating in cyber-affected states.
- Support wider business objectives such as digitalisation and net zero initiatives.

This work is business critical and sensitive in nature and so is not considered in detail here. We received funding for use across the first three years of RIIO-2. Funding was not provided

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for the later years due to the increasingly uncertain nature of the risks and hence the funding required.

### 6.3.5 Job completion lead-time including re-instatement (ODI-R)

Outputs	21/22	22/23	23/24	24/25	25/26
Total completed Jobs	1,174	1,284	-	-	-
% Completed within target	57.6%	82.3%	-	-	-

This output requires NGN to complete works for a connection or service alteration at sites where flow rates are below 275kWh per hour within 20 working days of payment. The RIIO-2 target for NGN is to ensure this is achieved 45% of the time by the end of the price control. NGN's performance in 2018/19 was c31%.

This year we beat the target, achieving 82.3% of works within 20 days and improving on the 57.6% delivered in 2021/22. The target was formally embedded within our workforce planning activities and our Totex operating model ensured resource was available to significantly improve performance.

# 6.3.6 Multi Occupancy Building Record Keeping (BAU)

In RIIO-2, we continue to ensure our approach to multi-occupancy buildings is consistent with best practice and will exploit the new analytical capabilities of SAP Hana. We do not expect any significant developments or issues to occur in RIIO-2 that would impact our record keeping related to MOB assets, however we will continue to monitor and adapt as more information arises.

In Year 2 the 3-5 storey riser population grew substantially as we embarked on a programme to identify and survey our 'medium rise' (3-5 storey) asset population. We anticipate this figure will continue to rise as we progress further. Whilst in previous years we have had a full view of 'high rise' (6+ storey) population, our data in the lower population has been more limited.

An app is under development to replace the existing paper-based survey forms, which will improve data capture through inbuilt validation rules.

# 6.4 Deliver an environmentally sustainable network

#### 6.4.1 Shrinkage and environmental emissions (ODI-F and ODI-R)

The purpose of the shrinkage and environmental emissions ODI is to incentivise the gas networks to reduce shrinkage and leakage gas volumes.

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Shrinkage gas includes gas illegally taken by third parties, own use gas the networks use primarily for pre-heating gas at locations where the gas moves from one pressure tier to the next, and leakage gas. The reputational ODI covers all of shrinkage gas.

During 2022/23 we successfully reduced our overall Shrinkage Gas volumes by 30.7GWh to 283.4GWh. This has brought us back on track with our original business plan target. Our improvement in performance is a result of targeted effort in increasing our MEG saturation levels and reducing our average system pressures. We have increased our filling and sampling levels, improved our routes, and developed internal performance league tables which has driven our saturation levels in an upwards direction. In 2022/23 we have achieved a decrease in average system pressure from 32.31mbar to a network total of 31.04mbar. Supply chain issues have remained, but not to the same extent as the previous year. As parts have been received and then fitted, we have witnessed a marked improvement in reliability which we are tracking in weekly MI. Further refurbishment and replacement work is planned for 2023-24.

This outcome can be seen in our assessment of our current and forecast performance against the financial ODI that covers leakage associated with average system pressure and gas conditioning levels. In 2023/24, we are conservatively forecasting no outperformance on the basis that the winter and operation conditions may be more severe than experienced in 2022/23.

Enviromental Incentive £m, 18/19 prices	21/22	22/23	23/24	24/25	25/26	Total
Environmental Emissions	(0.3)	0.4	-	0.1	0.1	0.3

# 6.4.2 Commercial Fleet EV Price Control Deliverable (PCD)

The purpose of the Commercial Fleet Electric Vehicle (EV) PCD is to support the networks in converting their vehicle fleets to EVs or other zero emission equivalents. The base totex

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allowance includes funding for updating the network vehicle fleets. The funding in this PCD relates to the incremental cost of purchasing an electric vehicle in place of an equivalent internal combustion vehicle. Whilst the unit costs are for vehicles and infrastructure based electric vehicle data, the PCD allows equivalent zero-emission vehicle types, such as hydrogen, to be substituted for an EV where this is efficient. The PCD is also subject to a volume driver which adjusts the five-year allowance to reflect the actual volume and mix of EVs delivered over the price control.

NGN's PCD includes replacing 146 small and medium vans with EVs and installing 182 electric vehicle charging points. Our plan was to begin installing the EV charging points in the first year of RIIO-2 and to purchase 2 EVs to fully trial and understand the impact on operations of adopting EVs.

However, the Covid-19 pandemic delayed the preparatory work needed to deliver this. A successful tender exercise was completed in 2022, where we appointed an EV charger supplier. We have now completed all the required surveys to ensure our offices and depots have the necessary electrical capacity to support the EV charging points. In addition, we have now secured approval by the local DNO to install them at NGN Depots and Offices and will proceed to do so.

NGN has continued to search the market for a fit for purpose battery electric van and has undertaken research and surveys across the network to understand suitability for operational use and emergency response. We are aiming to purchase a batch of EVs later in 2023, with the delivery date subject to worldwide supply chain issues that are still being experienced by fleet operators. Further orders will be placed in RIIO-2 subject to suitability assessments and availability of vehicles.

#### 6.4.3 Environmental action plan and annual environmental report (ODI-R)

The purpose of the Environmental Action Plan (EAP) and Annual Environmental Report (AER) is to ensure that GDNs take responsibility for the environmental impacts arising from their networks and are transparent in what they are doing to mitigate these. It aims to support the delivery of environmental outcomes and encourage greater environmental ambition.

The EAP included workload targets for three key Land Remediation activities:

- **On-going periodic condition reviews** for all 148 sites within the portfolio to ensure conditions remain stable and existing environmental risk assessments remain valid.
- **Environmental monitoring works** at up to 9 sites and intrusive survey works at up to 7 sites to confirm site conditions and refine the existing environmental risk assessment.

This year we completed the above activities across 72 sites, in line with the EAP target. This included desk top assessment at 1 of the sites, intrusive land contamination survey work at 3 of the sites, and environmental sampling at 12 of the sites to update the environmental risk and potential liability. Site inspections were completed at 61 sites to ensure their conditions remain stable and the existing risk assessments remain valid. Some sites saw more than one work activity.

 Remediation works at up to 8 sites where we have identified potentially non-compliant conditions, or where remediation would deliver environmental betterment to reduce the long-term contamination risks associated with the sites.

During 2022/23 we completed long-term remediation works at Knottingley AGI with a total of c.1,900 litres of hazardous liquid coal tar recovered from beneath the site's live gas apparatus. In addition, we continued our long-term remediation project at Howden Holder Station which is due to complete in autumn 2023. We also commissioned remediation feasibility assessments and design works to enable completion of our scheduled land remediation projects during 2024/25 and 2025/26.

Full details of our performance against our **Environmental Action Plan** initiatives will be provided in our **Annual Environmental Report** which will be published by the 1<sup>st</sup> of October 2023. A summary of the key actions we have taken during 2022/23 is provided below:

- Company car fleet near 100% hybrid, plug-in hybrid or battery electric vehicles only.
- Launch of a new electric and hybrid vehicle leasing salary sacrifice scheme to enable colleagues to make sustainable vehicle choices.
- In partnership with the White Rose Forest, Humber Forest and Community Forest Trust we directly funded the planting of 18,500 trees and enabled the planting of a further 600 large trees, to directly tackle poor urban air quality in our region.
- Homes for Nature 84 NGN infrastructure sites now have improved conditions to encourage biodiversity, in addition to successfully trialling 'No Mow May' during 2022 at five gas infrastructure sites.

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- Office and depot waste 4.5% reduction in total waste and percentage waste to landfill nearly halved compared to 2021/22. This mean we are on track to reach our 2026 targets. NGN also launched a new secure recycling programme for end-of-life PPE.
- Excavation spoil disposal to landfill (0.2%) and virgin aggregate consumption (9.5%) both experienced small increases compared to 2021/22 associated with changes in mains replacement workload locations to areas with constrained access to aggregate recycling centres (notably Yorkshire East Coast region) and city centre working with more restrictive reinstatement requirements.

Section 6.4.2 above provides details of our actions taken during 2022/23 to achieve our Commercial Fleet EV Price Control Deliverable.

#### 6.4.4 Business Carbon Footprint (ODI-R)

The purpose of the business carbon footprint (BCF) reputational incentive is to ensure that GDNs take responsibility for their BCF and are transparent in what they are doing to reduce this. Our Environmental Action Plan (EAP) included targets for the reduction in BCF over RIIO-2.

<b>Business Carbon Footprint</b>		21/22	22/23	23/24	24/25	25/26
Non-Shrinkage BCF for	Actual	4,785	5,099			
Scope 1 and 2 <sup>^</sup> – tCO2e	Target*	4,943	4,527	4,011	3,688	3,612
Non-Shrinkage BCF for key	Actual	15,200	15,233			
Scope 3 – tCO2e	Target*	15,298	15,030	14,724	14,457	14,191
Scope 1, 2 <sup>^</sup> and key 3 BCF – tCO2e	Actual	19,985	20,333			
	Target*	20,241	19,557	18,735	18,145	17,803
Total Scope 1, 2 <sup>^</sup> and 3 BCF – tCO2e	Actual	27,191	26,730			
Scope 1 - Shrinkage tCO2e	Actual	363,345	328,250			

\* Business plan targets amended in May 2022 (Scope 3) and April 2023 (Scope 1) in agreement with Ofgem to bring emissions reporting in line with best practice methods.

^ Market-based Scope 2 emissions methodology

The impacts of the Covid-19 pandemic temporarily influenced our Scope 1 and 2 BCF during 2020/21 and 2021/22 as our business travel habits changed and energy consumption fell. Our 2022/23 Scope 1 and 2 BCF (market-based excluding shrinkage) has normalised and was 191 tCO2e (3.6%) below our pre-COVID value from 2019/20 (location-based), but 13% in excess of our revised annual target for 2022/23. The main influences on this performance

are the external constraints we have experienced with our vehicle fleet investment plans, most notably delayed delivery of new diesel vehicles that we have ordered and the limited availability of suitable zero emission commercial vehicles as outlined in Section 6.4.2.

This area remains challenging for NGN to reduce emissions. Non-operational business mileage is now a focus area for the NGN Senior Management Team to encourage sustainable business practices. NGN continue to purchase only 100% certified renewable electricity for our premises and electricity consumption fell by 17% compared to the previous year.

Emissions for identified key Scope 3 emissions sources were similar to 2021/22 (+0.2%) and slightly in excess of our revised annual target (+1.3%). Contractor vehicles emissions fell by 2.8% compared to the previous year and rail and air travel emissions remained very low. However emissions associated with the purchase of PE pipe increased to service the workload offsetting this performance. Full details and discussion of the BCF performance will be reported in our 2022/23 Annual Environmental Report.

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# 7 Re-openers

# 7.1 Introduction

It is not always possible to anticipate all future events as some are outside of a company's control. This limits the ability of companies to accurately forecast costs, workload as well as any associated outputs.

In these circumstances Ofgem can include re-openers to manage this uncertainty. Depending on their design they allow Ofgem to adjust a company's allowances (in some cases up and in some cases down), outputs and delivery dates in response to changing circumstances during the price control period.

# 7.2 HSE Fatigue

The purpose of this re-opener is to account for changes in Health and Safety Executive (HSE) policies that result in material changes to Totex costs during RIIO-2. Funding can move up or down in response to HSE policy changes that impact safety requirements.

The HSE has engaged with the GDNs to assess our fatigue management approaches to ensure they are appropriate and benchmarked against the good practice as outlined in Managing Shift Work: Health and Safety Guidance (HSG 256). This includes a systematic approach for assessing and managing the risks of work-related fatigue, covering the planning and monitoring of working hours, and an audit of working time arrangements.

The exact impact is unknown at this point, but estimates have suggested we could see a material increase in resource needed to cover our 24-hour 365 days a year operation. We are already incurring additional costs to meet new HSE 12 and 16 hour working standards and these could reach circa. £5m p.a. by the end of RIIO-2. We are working to establish the most efficient response to this challenge to mitigate cost increases whilst remaining compliant with the best practice.

# 7.3 Streetworks

The purpose of this re-opener is to allow GDNs to recover the efficient costs of complying with new permit and lane rental schemes or new requirements introduced by public bodies after the RIIO-2 price control was set. These public bodies include agencies such as the Environment Agency, not just the Highways Authorities. Therefore, the scope of this re-

opener includes the situation where the GDNs incur increased costs for disposing of excavated material from streetworks if the Environment Agency withdraws Regulatory Position Statement 211.

When we submitted our business plan 7 out of 27 authorities in our network had introduced permit schemes, at a cost of c£2m per year. A further 17 authorities have now introduced schemes, which has increased our costs in three areas. We manage the process, pay the permit fees, and the permits themselves impose conditions on how we operate in the street, which impacts productivity. We estimate this will cost an extra £2.2m per annum based on current actual costs and run rate. This equates to £11.1m over RIIO-2. Importantly we did not include a forecast for this increase in our Business Plan submission and have looked to mitigate the impact where possible. We expect to re-open in January 2024.

The Environment Agency stated their intention to withdraw Regulatory Position Statement 211, which gave utilities exemptions from legislation governing the safe disposal of hazardous waste when the road is dug up. Street Works UK is leading an industry working group to develop an alternative way of working to ensure that utility excavation spoil waste can be practicably managed in accordance with waste legislation. We participated in the second phase of field work to characterise excavation spoil waste and develop and test new methods of risk assessment. This work to develop a new spoil waste management protocol in agreement with the Environment Agency by mid-2023 with a subsequent period of training and preparation prior to full industry implementation. Depending on progress and the likely outcome, this may be included in our re-opener in January 2024.

# 7.4 Cyber Security

The purpose of the Cyber Resilience Operational and Information Technology reopeners is to support NGN in managing risks associated with the security of its operational technology network and information systems which can change materially over time.

This work is business-critical and sensitive in nature and so is not considered in detail here. We received funding for use across the first three years of RIIO-2. Funding was not provided for the later years due to the increasingly uncertain nature of the risks. Two re-opener windows exist in RIIO-2 which allow us to request further funding to manage these future risks – these are in April 2021 and January 2023. Ofgem also require confidential ongoing biannual reports on progress. We re-opened in January 2021 which increased our funding over the 5 years of the price control. We have submitted a re-opener in January 2023 to

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both reprofile some of the existing expenditure and to request further funding in response to changing requirements and the enhanced Cyber Assessment Framework (CAF). This reopener is currently being reviewed by Ofgem, with a final determination expected later in 2023.

A further Authority Triggered re-opener is planned for January 2024 to support networks in progressing towards the CAF Enhanced Profile.

# 7.5 Non-operational IT and Telecoms Capex re-opener

The purpose the Non-operational IT and Telecoms Capex re-opener is to allow the GDNs to recover efficient costs directly incurred to deliver efficient IT enhancements to deliver their agreed IT strategy. Given the fast paced and constantly changing technology landscape Ofgem placed a high hurdle for allowing ex ante IT and Telecoms allowances, which meant some projects were disallowed. This re-opener allows the GDNs to in effect resubmit or amend those projects for consideration when they are more certain. There are two re-opener windows. We did not re-open in April 2021 but expect to re-open in summer 2023 to request funding for some of the projects which were disallowed and in response to changing market conditions for IT equipment and infrastructure.

#### 7.6 Tier 1 Stubs

The purpose of this re-opener is to allow GDNs to recover efficient costs for decommissioning Tier 1 iron stubs. A Tier 1 stub is a short length of Tier 1 iron main attached to a larger diameter parent main which would previously have been decommissioned at the same time as the parent main. Under the Three Tier Repex approach introduced in RIIO-1 not all large diameter parent mains will be decommissioned, as they may not pass a Cost-Benefit assessment.

Ofgem provided allowances for the first two years of RIIO-1 as the HSE policy was under review at the time, and so the volume and timing of work was uncertain. It is now clear under HSE policy that many Tier 1 stubs still need replacing.

There is only one re-opener window, which has been moved to October 2023. The reopener covers historic and future costs, and we expect to re-open to review progress to date and our plans for the rest of RIIO-2 to ensure we can deliver the required work by the end of the Repex programme. More details will be provided to Ofgem when we have a better

understanding of the whole programme cost and have analysed data from the first two years of GD2.

# 7.7 Physical Security Upgrades

Control Rooms and Back-Up Control Rooms (where the function they provide can lead to disruption of critical functions) are typically designated as Category 3 sites due to the potential for disruption. The CPNI High Level Security Principles can provide an initial view on the level of protection needed for such a facility, however, due to the nature of such sites there is not a "one size fits all" solution. We are currently reviewing options for ensuring our Control Rooms meet physical security standards to determine the most efficient option that is compliant with the legislation. We intend to submit our preferred solution and supporting analysis to Ofgem during the January 2024 PSUP re-opener window.

# 7.8 Net Zero Pre-construction Work and Small Net Zero Projects Reopener

East Coast Hydrogen is a collaboration between Northern Gas Networks, Cadent and National Grid Gas Transmission. It is a 15-year programme that will be carried out in multiple discrete phases. Further detail is provided in section 8.4.2 below.

FEED works are needed for the next phase of the East Coast Hydrogen Project. The full needs case, options and costs are being collaboratively drawn up with project partners to enable next phase of ECH. However, each partner will submit a separate re-opener application for their element in early 2024, including NGN.

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# 8 Innovation and Futures

#### 8.1 Introduction

One of NGN's key objectives within RIIO-2 is to prepare the network to deliver Net Zero at the lowest cost to the consumer, whilst maintaining world-class levels of system reliability and ensuring that we support the needs of consumers in vulnerable situations. We are aware that investment in our network is likely to need to increase to meet Net Zero targets as we progress through this decade.

To achieve this key objective, there are three allowances, the Strategic Innovation Fund (SIF), Network Innovation Allowance (NIA) and Net Zero Use It or Lose it Allowance, which can facilitate the transition to a Net Zero future.

NGN is committed to a whole systems approach to deliver sustainable energy solutions that will benefit our customers and contribute to meeting the UK's net zero emissions targets. A whole systems approach is one that facilitates strong collaboration and integration across utilities, operations, markets and supporting processes and is tested against a range of future scenarios.

# 8.2 The Strategic Innovation Fund

The Strategic Innovation Fund (SIF) is a funding mechanism which aims to find and fund ambitious, innovative projects with the potential to accelerate the transition to net zero. These projects should help shape the future of energy networks and succeed commercially where possible. Ofgem have allocated £450 million to this fund over the period 2021 to 2026, with the option to extend and increase as necessary. The SIF is delivered in partnership with Innovate UK, part of UK Research and Innovation (UKRI).

The following four key Innovation Challenge areas underpinned the initial round 1 funding opportunity. These are:

- Whole system integration.
- Data and digitalisation.
- Heat.
- Zero emission transport.

With subsequent rounds of funding these key areas evolve across a wider range of themes focusing of specific challenges for both the gas and electricity sectors.

The SIF is structured over three Project Phases (Discovery Phase, Alpha Phase and Beta Phase), with successful application and assessment against Eligibility Criteria as a condition of receiving SIF Funding for the relevant Project Phase.

# 8.3 Network Innovation Allowance

Within RIIO-2 the purpose of the Network Innovation Allowance (NIA) is to fund innovation relating to support for consumers in vulnerable situations and/or the energy system transition. NGN currently uses a six-step process to decide on which projects to fund through the NIA Allowance. This process helps identify barriers to realising a successful outcome and ensures that they are removed. It also allows us to better understand the project data and stakeholder requirements upfront. This process is currently under review to minimise the effort required develop the business case and move to a more agile and speedier approvals model. It is anticipated this new process will go live Q3 2023.

Idea	Discovery	Approval	Initiation	Delivery	Implementatio
Central Innovation team	Business project manager	Central innovation team	Central innovation team	Business project manager	Business project manager
Senior sponsor appointment Project Manager (PM) appointment Business project manager Challenge statement idea capture idea evaluation	-Project scoping -Stakeholder engagement -Statement of requirements -Project plan -CBA validation	-Project registration Business project manager -Think Tank approval -Director approval -ISG approval -Contract approval -PEA approval	-Project manager training -Project management tool setup Business project manager -Project kick-off meeting -Project communications -G23 initiation	-PMO monthly -Stage gate reviews -Contact management -CBA validation -Project communications -Stakeholder engagement -Project closure meeting -Think Tank review	-Implementation scope capture -Business case -Project plan update -G23 approval -Technical standards issue / approval -Change management documentation -Training delivered -Training records -Stakeholder engagement
Included in RIIO-1 pro New process for RIIC	ocess )-2		-Competency capture -Risk assessment/ method statements		-Project communications -Benefit measurement -Ongoing benefit

Key highlights from some of the projects we have progressed in 2022/23 are outlined below. Further details of these and our other projects can be found in NGN's RIIO-2 Year 2 Innovation report.

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#### 8.3.1 Visualising the opportunity for pipeline hydrogen for mobility applications:

This project will model the hydrogen mobility and hydrogen gas grid networks with the key output being a dynamic visualisation tool which will support the co-development of the hydrogen gas grid and hydrogen heavy transport sectors. The model will compare the locations of existing and planned hydrogen gas network infrastructure and projected future hydrogen transport demand. The tool will allow users to visualise the likely hydrogen transport demands and hydrogen gas grid locations to identify high potential future sites for gas grid connected hydrogen refuelling stations.

#### 8.3.2 IoT Pressure Sensor Pilot:

In collaboration with NGN, and as part of a recent NIA project, HP1 Technologies Ltd has successfully developed a highly cost-effective pressure sensor system, designed to be incorporated at low cost into the PE Purge Tee assembly. This now means a standard gas network component is capable of capturing and transmitting real time pressure data, via a selected comms pathway to the Cloud and can be made available for management analytics with appropriate dash boards. This project ran from Feb 2019 to April 2021. This next phase of work seeks to take the learning and pressure sensor system developed in the earlier NIA project 239 to roll out the developed technology in live field trials, to establish the long-term credibility and capability of this new technology approach to information gathering in the real-world setting.

#### 8.3.3 Vulnerability Visualisation Tool Phase 2:

There are currently several systems for capturing and measuring vulnerability for an area, each mostly bespoke by a partner or stakeholder. By building a single point of reference for all parties, we will be able to unlock knowledge held internally, assist other projects involved in improving and identifying vulnerable customers and areas, and ensure that stakeholders who work across geographic boundaries are able to take a more holistic view of their practices. A prototype Vulnerability Visualisation Tool has been successfully built and validated. Whilst the tool has been developed with Northern Gas Networks, there has been interest from a diverse range of networks and stakeholders, which have been involved in testing and validating the tool, identifying further development requirements.

### 8.4 Futures

In its RIIO-2 Final Determination, Ofgem established a Net Zero and Re-opener Development Fund Use it or Lose it allowance ("NZARD UIOLI"). The purpose of the NZARD UIOLI is to enable Network Licensees to fund small Net Zero facilitation projects, and also to allow for early development work on projects that network companies intend to bring forward at a later stage through other RIIO-2 Net Zero-related mechanisms. NGN were awarded £4.6m under the NZARD UIOLI.

#### 8.4.1 Overview of NGN Futures projects

In 2021/22 NGN has allocated its UIOLI across a number of projects which predominately focused on understanding the role that gas would play in helping to achieve the UK Net Zero emissions targets. We have also focused on developing a strategy and roadmap for energy futures that considers the impact of changes across the whole energy system. This will help to ensure that we deploy the UIOLI in its most effective manner. The figure below outlines our approach to our Net Zero Strategy development.



In our strategy analysis we identified a range of actions that NGN could implement to prepare the business for potential future scenarios, which differ by importance, urgency, cost and progress to date as shown by the figure below. Any steps taken will prioritise the 'low regrets' actions which are relevant in multiple future scenarios. Each of the five projects progressed is described below.



#### 8.4.2 East Coast Hydrogen

East Coast Hydrogen, phase 1 is a collaboration between Northern Gas Networks, Cadent and National Grid Gas Transmission. It is a 15-year programme that will be carried out in multiple discrete phases.

The East Coast Hydrogen Feasibility Report is the first step in the decarbonisation of industrial, commercial and domestic demand across the East Coast Hydrogen region and beyond. The project would see up to 39,000 businesses and over 4 million homes converted to hydrogen. The programme will benefit from the natural assets of the North of England, including existing and potential hydrogen storage facilities, and build on the hydrogen production in two of the UK's largest industrial clusters in the North East and North West, in turn ensuring significant private sector investment in the UK's industrial heartlands.

It will be the first major step in the conversion of our national gas networks to hydrogen and will act as a blueprint for subsequent conversions across the UK. The project also demonstrates the innovation, engineering capabilities and economic opportunity in the North, and creates tens of thousands of highly skilled Green jobs in the future hydrogen economy.

NGN plans to invest more of its UIOLI in 2022/23 to progress phase 2 of the East Coast Hydrogen project to generate evidence to support an application for additional funding to commence the project build through the Net Zero Pre-construction and Small Net Zero Projects Re-opener later in RIIO-2.



#### 8.4.3 Residential Heat Study

The objective of this study was to analyse the upfront capital costs facing consumers when considering the installation of new low-carbon heating technology solutions for their homes today, including the cost of any associated home upgrades that will likely be required. The

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study tracks the upfront costs of these respective technologies over time to establish whether the cost reduction targets mooted by government and heat pump stakeholders are being delivered, and the implications this has on our ability to decarbonise the UK housing stock.

#### 8.4.4 Redcar Hydrogen Community

In 2021/22, NGN worked with Ofgem and BEIS (now DESNZ) to prepare a feasibility study for the development of a hydrogen village on its network. The feasibility study was formally submitted to Ofgem and DESNZ as a proposal to undertake a further detailed design for the village trial when Ofgem triggered the Net Zero Pre-Construction and Small projects Reopener in 2021. NGN's proposal involves switching the gas supply from natural gas to hydrogen for around 2,000 homes and businesses in parts of Redcar including the town centre, Warrenby, Coatham and an area of Kirkleatham from 2025 for around two years.



NGN selected the Redcar area for its project due to access to existing plans for hydrogen production in the area, and as Redcar contains a diverse range of housing stock and businesses. If ultimately approved, the delivery of the hydrogen village will be a significant project. It would involve the production and storage of hydrogen and repurposing our

network to distribute Hydrogen. All gas appliances would need to be replaced with a hydrogen alternative or electric equivalent if customers did not want to participate.

#### 8.4.5 HiiRoc Trial Unit

The HiiRoc unit is seeking to demonstrate the efficient and clean production of hydrogen using natural gas and the process of methane pyrolysis. Unlike steam methane reformation which produces a significant amount of carbon dioxide, the HiiROC unit produces hydrogen and solid-state carbon, known as carbon-black, which is then collected and used in other applications. As there is no exhaust gas vented to the atmosphere the carbon footprint of the unit is greatly reduced. An additional benefit is the energy required to split the hydrocarbon molecules is significantly less than the energy requirements for hydrogen production through electrolysis.

#### 8.4.6 Whole System Explainer

NGN worked with its project partners to develop an intuitive explainer for consumers and stakeholders regarding the role of gas, including hydrogen, in the whole energy system. The intention of this explainer was that it could be used in projects such as the Hydrogen Village Trial to demonstrate how the integration of hydrogen with electricity could lead to delivering overall better value for consumers and to help deliver against the UK's net zero emissions targets. The output of this project was a short video that has proved useful in supporting NGN's messaging regarding its efforts to deliver a lower carbon network.

#### 8.4.7 Net Zero Pre-cons truction and Small Net Zero Projects Re-opener

The Net Zero Pre-construction Work and Small Net Zero Projects Re-opener (NZASP) was created to allow gas distribution and gas transmission companies to undertake early design, development, general pre-construction work, and net zero facilitation capital projects that will enable the achievement of Net Zero Carbon Targets. The reopener is Ofgem triggered, and projects progressed under the UIOLI help to provide early development work on projects that network companies intend to bring forward at a later stage through other RIIO-2 Net Zero-related mechanisms.

In 2021 NGN progressed the East Coast Hydrogen and Redcar Hydrogen Community on the basis that Ofgem could trigger the reopener in RIIO-2 to fund further phases of the projects.

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In 2021, Ofgem triggered the NZASP to fund phase 3 of the Hydrogen Village trials. The creation of a 'hydrogen village' was first mentioned in the Prime Minister's 10-point plan for a green industrial revolution in autumn 2020 and reiterated in last year's Heat and Buildings strategy. It will follow the creation of a hydrogen community of 300 homes using 100% hydrogen (SGN's H100 Fife project) and is expected to be followed by a hydrogen town of around 10,000 properties before the end of the decade, a project we are already starting to work on.

In December 2021, NGN submitted its Feasibility study for a Hydrogen Community in Redcar, as outlined above, to Ofgem to secure funding to commence the detailed design phase of the project. Following a detailed assessment of its proposal by DESNZ and Ofgem and further detailed consultation NGN was awarded £5.72m of funding from Ofgem and are contributing over £600K for the detailed design phase.

The detailed design phase was completed, and the final proposal submitted to DESNZ in March 2023. NGN expect to receive a decision on a live trial in September 2023.

A proposal from Cadent to host a hydrogen village in Whitby, Ellesmere Port, also progressed but was eliminated from the process by DESNZ in July 2023.