Cadent
Your Gas Network

Strategic Performance Overview

RIIO-GD1 Annual Monitoring 2017/18

July 2018

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1. Strategic Summary
CEO Update

Our Strategy

Our strategy is simple – to deliver performance for customers, and improve that performance to meet their evolving needs. It is about engaging with our communities, being a responsible business, safeguarding customers, and having a motivated workforce with the right skills and the right opportunities to develop careers within the organisation and the industry more broadly.

Chris Train OBE,

Our strategy has three key aims:

1) To deliver the best value outcomes for our customers across all our networks by focusing on performance and continuously improving service such that our customers know we are delivering outstanding value for money.

2) To shape the future of the energy system through our networks playing a key role in decarbonising heat and transport and facilitating the most sustainable and least disruptive path to meeting the United Kingdom's carbon and renewable targets. We will achieve this through innovation that demonstrates to national and regional policymakers the most practical routes to a secure, low cost and low carbon future. Underpinning all of this will be a RIIO-GD2 framework developed in partnership with our customers and stakeholders that meets their aspirations both now and for future generations.

3) In order to support our first two aims we will develop more effective organisational capability through transitioning to a more network aligned operating model with clearer accountabilities alongside our new customer service strategy together with better data management and information systems.

Our Performance

This has been our first year as Cadent and as an independent company and consequently a transitional and pivotal year for us. While it has been challenging as we established a new organisation and culture together with exogenous factors such as "the Beast from the East," we have continued to deliver a safe and reliable network, driven further efficiencies as well as some notable service improvements for our customers. Just a few of examples of what we have achieved are worth highlighting.

Despite a difficult environment, we were able to achieve a step change in delivery of gas connections to Fuel Poor customers in London as a result of stepping up our stakeholder engagement with local agencies and authorities. This makes a real difference to customers in fuel poverty as witnessed by Dermot Nolan Ofgem's Chief Executive, when he recently visited some of this socially important work we were doing.

In relation to our wider customer base we have made some significant improvements in customer service performance with nine out of twelve metrics now above target and seen

large reductions in complaints through initiatives focused on delivering great service for our customers. Although very few of Cadent's customers will ever experience a gas supply interruption we recognise that when they do, we need to respond quickly and efficiently. To that end we are seeing a continuing reduction in the time it takes us to restore supply for the majority of our customers. We are experiencing more difficulty in London in Multiple Occupancy Buildings (MOBs) such as flats due to planning and engineering complexity, but are working hard to improve and reduce inconvenience through innovation, working more effectively and supporting customers while gas supply is restored.

We maintained strong performance in safety and reliability achieved through amongst other things maintaining and repairing our assets and replacing up to 1,800 kilometres gas mains per annum as part of the 30-year programme that began in 2002. The benefits of this investment are seen when the networks require heightened levels of resilience, for instance at the end of February into March 2018 when the United Kingdom experienced "the Beast from the East". We saw record demand for gas from our customers that we were able to meet when they most needed it. We also had the highest number of calls to the national gas emergency helpline in over a decade, with 42,000 customers across the country calling us on one day alone. Our emergency engineers were able to respond and keep customers safe throughout, despite difficult travel conditions and in some cases able to help others such as essential NHS staff to get to work. At times like these it shows just how vital safe and reliable gas is to homes and businesses as well as the UK economy and why we must continue to invest in it.

Our stakeholder engagement has continued to go from strength to strength with more effort than ever going into understanding the diverse needs of different stakeholders and the regions we serve. We continue to be the leading gas network in safeguarding customers whether through our award winning work to co-ordinate and develop the electricity and gas priority service register or through protecting and educating customers about the effects of carbon monoxide. We are also at the heart of energy market improvements and the only energy network to support the Department for Transport in developing new streetworks legislation and systems that will reduce congestion on our roads.

We have done all of this while continuing to drive down our network costs for hard pressed consumers. In real terms the network portion of a typical domestic customer will reduce from £141 to £127 over the RIIO-GD1 period, significantly less than customers will pay for a boiler service contract.

Our Challenges

Despite all the great work we do for our customers we continue to face considerable challenges that require careful management. For instance, we are experiencing increasing cost pressures in capital delivery both for our mains replacement and asset health delivery. Some of this was anticipated as we planned to ramp up our investment profile through to the end of RIIO-GD1, but we are seeing significant resource constraints and cost pressures in the construction labour market post the demise of Carillion as well.

We have identified a need to improve our asset records on High Rise Buildings and as a consequence are carrying out additional surveys to ensure they are as accurate and up to date as possible. As part of this Ofgem and the HSE are currently investigating High Rise records and we are co-operating fully with both sectoral regulators.

There has understandably been more focus from local authorities, housing associations and government, following the tragic events at Grenfell Tower, on High Rise Building stock and particularly in London where most of these buildings are situated. This has meant a

significant rise in the number of requests for surveys of gas supplies and in some cases the need to repair, refurbish or replace assets. We have experienced an increase in workload which has meant more of these buildings having supplies interrupted and given complicating factors in London such as planning consents and listed buildings we are finding that the length of time to restore gas supplies has increased significantly. We are continuing to seek improvements in our response to minimise inconvenience to customers as well as increase our support with alternative heating and cooking and other measures where these will help. As part of this we will be stepping up our alternative energy programme for those customers who use very little gas e.g. for cooking only to enable the use of electrical appliances where this proves more economical and convenient for them.

As already highlighted we have seen significant improvement in our overall customer performance although some areas have yet to move in the right direction. For example, customer service for our mains replacement work in the West Midlands and similarly connections work in both the West Midland and North London remains disappointing and we are focusing our efforts on improving these areas.

Looking Ahead

There is much to do over the remaining RIIO-GD1 period as well as looking further forward into RIIO-GD2 and beyond. Within the current period we will continue to deliver our primary outputs and seek to provide value for money and good service for our customers. We are forecasting reducing customers' bill by £14 in real terms over the RIIO-GD1 period alongside delivering the outputs our customers need such as the 99.99% reliability of gas supply and our 24/7 gas emergency service which is free at the point of use. We are excited about the creation of our Customer Engagement Group to be chaired by Zoe McLeod which will provide us with an independent challenge on how we are engaging with our stakeholders and using their insight and preferences to shape our current and future plans.

We will drive further improvements in planned works and connections customer satisfaction as well as the safe and reliable network that all expect of us. In addition we will seek to maintain our fuel poor connections programme following the tighter qualification changes introduced by Ofgem and will innovate through new models to help identify fuel poverty and further develop engagement with local authorities.

We will manage the increasing workload of replacement and asset health as we try to mitigate against the cost pressures we have seen and this is reflected in our totex forecasts. We will also continue to address the challenges we have with Multi Occupancy Buildings from survey completion through to dealing with repairs and replacement or indeed by offering alternative energy solutions to our customers where gas useage is low such as cooking only supplies. Where difficulties are encountered we will seek to minimise restoration durations and provide adequate welfare for customers, particularly those in vulnerable situations.

We will continue to drive efficiency in our operations and further develop a more individual network aligned operating model thus returning low charges to our customers than might otherwise have been the case. Our transformation plan will change the look and feel of the business by improving productivity, creating a network-aligned organisation with resources and decision-making closer to the asset and the customer.

Aligned to this we will maintain our close engagement with the Department of Transport to ensure the new street manager system, permit schemes and lane rental are as effective as possible in reducing congestion and assisting works co-ordination by 2020. We also will

need to manage the signficant workload and resource requirements associated with the ramp up of HS2 by diverting pipelines where requested to do so across our networks.

We will help BEIS and gas suppliers with the smart meter deployment through providing safety feedback and advice in order to reduce the need for intervention by our engineers. We have received praise from both BEIS and suppliers for our industry leading work and more tangibly, as a result of our actions, our forecast incremental cost impact is reducing and by extension it is likely to improve customers experience and therefore response to the deployment.

Finally, we will engage actively with our customers and stakeholders for RIIO-GD2 to develop business plans aligned to their needs taking into account their unique regional and sectoral requirements. In doing so, we will explore the innovation required to ensure that the United Kingdom is able to achieve its climate change targets sustainably and at lowest cost by decarbonising heat and transport and our role in achieving this. We are excited about the potential of the groundbreaking HyNet North West and HyDeploy projects which set out a vision of how hydrogen could be introduced to decarbonise industry and domestic consumers as well as creating regional growth and jobs. We will need to turn these visions into reality if we are to address the needs of our current customers as well as those in future generations to come.

Chairman's Update

We have had an encouraging start to this new chapter, establishing the new business and the Cadent brand identity. We have continued to deliver a safe and reliable supply of gas to our 11 million homes, offices and industry and improved our service to our customers whilst maintaining our focus on efficiency.

Sir Adrian Montague, Chairman

We have continued to play a key role in helping shape the future of the industry and meeting future customers' energy needs through our innovation portfolio. We recognise that there is more to do before we can become the company we aspire to be, and the Board is focused on supporting management to achieve this.

Board focus and outlook

We will continue to drive operational performance to move Cadent into the position of the frontier network company. This is grounded in ensuring we deliver gas safely and reliably to our customers whilst building on the improvements we have made in customer service this year to deliver consistent and improved service across all of our four network areas. The business has challenging targets to meet on mains replacement and other asset health improvements in a constrained and challenging construction market where managing increasing cost pressures and skilled resource availability will be a key focus.

We will focus on ensuring we deliver the outcomes we have committed to our customers, ensuring we have clear accountabilities and performance across all our networks, delivering with more pace. This year has also seen the start of preparations for the next price control review period for the business (RIIO-GD2 starting in April 2021). The Board is ensuring the business engages deeply with its customers and stakeholders to develop the right plans to meet their energy and service needs into the next decade and beyond. The Board is fully committed to the critical role that gas and our networks can play in supporting the decarbonisation of heat and transport. It is particularly encouraging to see that the cutting edge projects Cadent and its partners are working on to try to establish alternative, more environmentally friendly gas (for example by bringing renewable gas or hydrogen into the network) are helping policymakers shape that future. We are firmly of the view that gas will continue to play a fundamental role in the country's energy mix and heating our homes and businesses and we are committed to ensure Cadent plays its part in providing thought leadership to bring this about.

Board Governance

From a governance perspective, the primary focus has been on assembling the Board and establishing governance frameworks and procedures. We now have a larger Board than under our previous ownership structure, with diverse representation from our consortium of UK and overseas investors with a strong balance of independence and wealth of experience, who can provide a strong platform to support the company in achieving its ambitions to become the frontier gas distribution company. We believe this diversity and breadth will support our drive to help Cadent achieve its outputs for the benefit of its customers both now and in the future.

2. Output Summary

RIIO-GD1 created a platform that has allowed us to deliver continuous improvement across our services whilst reducing bills in real terms. Customers receive a safer, more reliable and more innovative network service including increasing volumes of green gas. Our customers in vulnerable situations are helped by free or low cost connections and new means to identify and record their circumstances.

Delivering to customers and stakeholders

2017/18 continued Cadent's improvement in output delivery and we are overall on-track for delivery of the output commitments. The following section contains an update on some of our key achievements and areas of focus as well as a high level summary of our general output performance.

Key highlights

- We exceeded the 97% standards of service for 1-hour and 2-hour emergency response in all of our networks
- We exceeded the connections standards of service in all networks
- Within planned works North London and North West networks have seen the most significant improvement in customer satisfaction performance of any gas network in the entire RIIO-GD1 period.
- As a result of the actions we have taken our complaints process volumes have reduced by 34% relative to 2016/17 and all of our networks have improved their complaint metric score since 2016/17 with performance well below the 11.57 RIIO-GD1 target.
- We delivered a total of 5,430 Fuel Poor Connections across our networks. The strategy that we implemented in 2016 for our London Network to improve performance has doubled the demand for Fuel Poor connections from a baseline demand of just short of 250 connections a year to over 500 this year, and we expect this to sustain next year.

Focus areas

We acknowledge that our customer satisfaction surveys for connection work in North London and West Midlands and planned work in West Midlands are still not achieving the level of service we are targeting. We remain committed to ensuring all our customers experience a high quality service and our annual performance is outlined in the summary table below.

Cadent has experienced unprecedented focus around gas supplies into multi occupancy buildings, whilst the impact has been most pronounced in North London, implications have been felt in all networks. As a result of this uncertainty coupled with the inherent complexity of restoring supply associated with planning restrictions, managing agents, local authorities and property owners etc, there is a risk that we may not achieve the target set for North London durations. We remain committed to continued engagement with Ofgem regarding this issue.

In relation to mains replacement we have faced increasing challenges as a result of market driven unit cost increases driven by the scarcity/competition in securing the qualified resources, but despite this we have continued to deliver our primary risk removed output.

Cadent
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Performance Snapshot 2017/18

Output	Metric		East of England	London	North West	West Midlands
Number of customers directly connected to network	No.	Comparator	4,011,239	2,273,731	2,687,832	1,961,381
Total GDN network length all pressure tiers	km	Comparator	51,780	20,931	34,190	24,210

Network reliability

Overall network reliability	% of full delivery 24/7/365	Comparator	99.998%	99.989%	99.998%	99.998%
Maintaining Operational performance		8 year	√	√	√	√
Unplanned customer interruptions – exc. major incidents	No. of customers affected	Comparator	11,763	10,421	11,286	6,089
	% per number of total customers	Comparator	0.3%	0.5%	0.4%	0.3%
	Average duration in minutes	Comparator	1055	11190	648	1378
Interruptions - unplanned (vol)		8 year	√	√	√	√
Interruptions - unplanned (duration)		8 year	√		√	√
Interruptions - planned (vol)		8 year	√	√	√	√
Interruptions - planned (duration)		8 year	√	√	√	√
Number of major incidents	Number : Customers affected	Comparator	1 : 548	0 : 0	0 : 0	0 : 0

Customer satisfaction

Customer satisfaction – Emergency response & repair	score out of 10	Ofgem target (8.01)	9.44	9.05	9.38	9.29
Customer satisfaction – Planned works	score out of 10	Ofgem target (8.04)	8.46	8.25	8.11	7.75
Customer satisfaction – Connections	score out of 10	Ofgem target (8.09)	8.44	7.17	8.69	7.85
Complaints metric	scoring of complaints resolution	Ofgem target (below 11.57)	5.71	7.52	7.79	7.62
Stakeholder Engagement			6.0	6.0	6.0	6.0

Output	Metric		East of England	London	North West	West Midlands
Connections						
% of all quotes issued within timescales set	%	Ofgem target	99.74%	99.65%	99.83%	99.80%
% of jobs substantially completed on date agreed with the customer	%	Ofgem target	93.66%	92.15%	96.32%	92.44%
Introduce distributed gas entry standards - cummulative 17/18		8 year	√	√	√	√
Social obligations						
Fuel poor connections made in year	No.	Ofgem target	1,921	527	1,929	1,053
% of fuel poor connections RIIO to date vs period to date target	% better than target	Comparator	29%	-6%	2%	2%
Carbon Monoxide awareness		Annual	√	√	√	√
Safety						
Attend uncontrolled escape in 1 hr	% achieved	Ofgem target is 97%	97.1%	97.4%	98.0%	97.3%
Attend controlled escape in 2 hrs	% achieved	Ofgem target is 97%	97.7%	97.8%	98.9%	98.2%
Annual repair risk performance vs target	% better than target	Ofgem target	91.7%	97.5%	94.2%	92.0%
Call Centre response	% better than target	Ofgem target	92.03%	92.03%	92.03%	92.03%
Iron mains risk removed	% better than target	Ofgem target	86.5%	64.3%	89.7%	73.6%
Major accident prevention		Compliance	√	√	√	√
Sub deducts		Ofgem target	√	√	√	√
Environmental impact						
Reduction in shrinkage in year (gas emissions)	Volume (GWh)	Comparator	-4	-14	-10	-2
Shrinkage actuals compared to target volume	Improved shrinkage %	Ofgem target	8%	7%	8%	6%
Renewable gas connections	Number : Volume (scmh)	Comparator	0 : 1230	1 : 100	0 : 0	0 : 1400
Provide biomethane connections info.		Annual	√	√	√	√
Financials						
Totex operating costs	£m	Ofgem target	319	267	214	164
% lower Totex than allowance	%	Comparator	9%	14%	17%	18%
Other pass through costs	£m	Comparator	123	92	110	76

RAG Status	
GREEN	*GDN has successfully achieved an annual output or is on track to meet the eight year output commitment*
AMBER	*GDN at risk of failing to meet the eight year output commitment*
RED	*GDN has failed to achieve an annual output or is forecasting to fail an eight year output commitment*

This year we have significantly increased our stakeholder engagement activities and we have continued to influence at all levels in respect of the future role of gas. In addition to delivery on our outputs during 2017/18:

- We conveyed 273 TWh of gas to 11 million homes and businesses, this is equivalent to 90% of the total UK annual electricity system demand (which is around 300TWhs).

- We have increased our support for those customers in vulnerable situations through our locking cooker valve initiative, creating safer homes for those living with Alzheimer's and dementia.

  This simple safety device allows those with dementia and other similar illnesses to retain their independence and stay safe in their homes. The lockable valve is installed for free on the pipework to the cooker or hob. When locked, it stops gas flowing and can only be opened with a key. This means that when locked, the gas cannot be left on accidentally.

  We've been proactively promoting this service working with the emergency services, local councils, other gas networks and charities such as the Alzheimer's Society. We've promoted the service on our website and made a Facebook video which has been viewed over 19,000 times and we've been able to fit over 277 valves, ensuring our customers can retain their independence and stay safe in their homes.

- We have taken a proactive approach to minimising congestion, reducing disruption and improving journeys for road users. We have led on behalf of all energy networks the Alpha phase of the Street Manager project being run by the Department for Transport (DfT) to transform the planning, management and communication of street and road works. Cadent was nominated to represent Streetworks UK and this appointment reflects the importance, experience and expertise that we were able to bring to this critical project and demonstrated the trust we have gained with our key stakeholders. We will continue this role through 2018/19 as the Street Manager project evolves to completion.

- We have continued to support the programme to install smart meters in every home by 2020. We have worked collaboratively with gas suppliers on smart metering roll out by developing a feedback mechanism to advise gas suppliers of our findings within 24 hours where we have attended escapes or other faults reported to us by customers following new meter installations performed by the suppliers. Our proactive reporting approach was recognised by BEIS as industry-leading and we have shared our approach with all gas networks who are now all providing reports on request. Providing the timely reports to gas suppliers has allowed for direct feedback to installers, resulting in safer installations and freeing up engineers for other emergency works. This programme has been widely praised by gas suppliers who find the feedback provided invaluable and should improve customer experiences of the deployment.

- We have taken a leading role in the future role of gas contributing to the development of the UK energy market, both in the short-term as we look to RIIO-GD2, and in the longer term to support government decarbonisation targets.

  We are active contributors to regional and national energy debates and policy development through various forums, and also engage with stakeholders through our Future of Gas thought leadership papers, which discuss how the gas networks can play a critical role in delivering a low cost and reliable path to decarbonisation.

  - We are leading a three-year ground-breaking project, HyDeploy, that will provide evidence of the level of hydrogen which can be used safely in the gas network without making any disruptive changes to customers' appliances. Hydrogen's

widespread use blended with natural gas has the potential to reduce carbon emissions by as much as 6m tonnes a year.

- We have developed a conceptual study funded through the Network Innovation Allowance called HyNet North West which provides a practical and economic framework to introduce hydrogen into the gas network in the Liverpool-Manchester area in our North West network.

Our political engagement continues to demonstrate the vital role that gas networks play now and in delivering the low carbon energy system of the future. We have been engaging on five key areas:

1. Communicating the customer benefits of future energy solutions that incorporate gas: low cost, low emissions, low impact energy.
2. Moving the conversation from 'gas network' to a 'whole systems approach' reinforces the critical role that gas networks will play in conjunction with other energy providers.
3. Demonstrating our vision to evolve the gas network to meet the 2050 decarbonisation target (80% emissions reductions based on 1990 levels) and make considerable contributions to interim carbon budgets for heat and transport.
4. Reinforcing that there are 'multiple pathways' towards our shared objective: there are a range of different technologies and roadmaps towards decarbonisation targets, many of which will be region-specific approaches to energy and infrastructure.
5. Showing how we can implement solutions today that contribute to decarbonisation targets without impacting on our ability to make future network decisions.

We have participated in a number of committee meetings with energy ministers and officials on specific issues to support important energy discussions, as well as successfully engaged with mayors and MPs in our networks, seeking mutual understanding of both local and national needs, the desired outcomes for each region and how we can work collaboratively to deliver the right changes.

We have actively engaged with the Transport and Infrastructure leads for Transport for West Midlands to seek support for our proposals for an integrated waste and transport solution in Birmingham as well as attending London's High Level Infrastructure Group where our contribution allows us to directly support and positively influence London's pattern of growth and ambition to be a zero-carbon city. In addition we have participated in Liverpool's first energy roundtable during which we discussed the challenges of decarbonisation and regional solutions such as our HyNet project.

To mark our first year we have also received a number of awards this spanning a broad range of activities across the areas where we operate e.g Utility Awards - Environmental award for CNG, Street Works UK awards - 'Street Works Future Projects' category for the initiative to replace steel driveway boards with plastic lightweight, slip resistant boards. Pipeline Industries Guild (West Midlands branch) award for young professionals in the pipelines sector and Transform Europe Awards 2018 for our brand rollout.

3. Totex drivers

Cost efficiency benefits for our customers

Our Totex performance in the year was ahead of expectation driven by success in our first year as a separate business to deliver Opex cost efficiencies ahead of schedule, whilst delivering a safe and reliable network despite its challenges (including the "Beast from the East"), as well as some notable improvements for our customers. Overall, our Totex forecast to deliver the eight year output commitments, is £8,137m for the RIIO-GD1 period; and represents Totex costs (17/18 prices) which are c.£640m (7.3%) lower than the Totex allowance (as represented in RRP Table 2.2). East of England's lower performance is driven by its lower proportion of Repex spend within the Totex allowances.

OVERALL TOTEX PERFORMANCE*	CURRENT YEAR		RIIO GD-1 TO DATE		8 YEAR FORECAST	
NETWORK	VARIANCE TO ALLOWANCE £m	% VARIANCE	VARIANCE TO ALLOWANCE £m	% VARIANCE	VARIANCE TO ALLOWANCE £m	% VARIANCE
EAST OF ENGLAND	34	10%	122	7%	38	1%
LONDON	46	15%	268	17%	255	10%
NORTH WEST	47	19%	115	9%	151	7%
WEST MIDLANDS	38	20%	139	14%	218	14%

* Performance measured against allowances as represented per the PCFM (i.e. inclusive of Totex adjustments such as for IAS19 Pension costs etc.)

This efficiency against allowances is lower than what we reported last year (£705m in 16/17 prices), and is mainly driven by our increased Totex forecast, explained in more detail below.

Our forecast of Repex spend to deliver the risk removed primary output has increased by £170m (5.4%) since last year mainly reflecting market driven unit cost increases driven by the scarcity/competition in securing the qualified resources. In addition to market pressures we now also envisage lower than originally anticipated benefits arising from innovation which accounts for c£20m of the increase.

Our forecast of Capex spend has increased by £50m (4.4%) since last year largely driven by upward unit cost pressures (as evidenced during the most recent procurement tendering exercises) for workload associated with delivering the Asset Health Network Output Measures (NOMs) which form part of the overall Risk Monetisation targets for each of our networks. Furthermore we now also envisage additional network reinforcement work to ensure ongoing security of supply. Over the last year, since separation from National Grid, we have developed our IS strategy and have increased our capital forecast to invest more in new technology (new end user hardware, IS Applications and Critical National Infrastructure investment) which drive long term enduring efficiencies which will benefit consumers in the future. These efficiencies are seen in our corresponding reduction in annual IS opex cost forecasts.

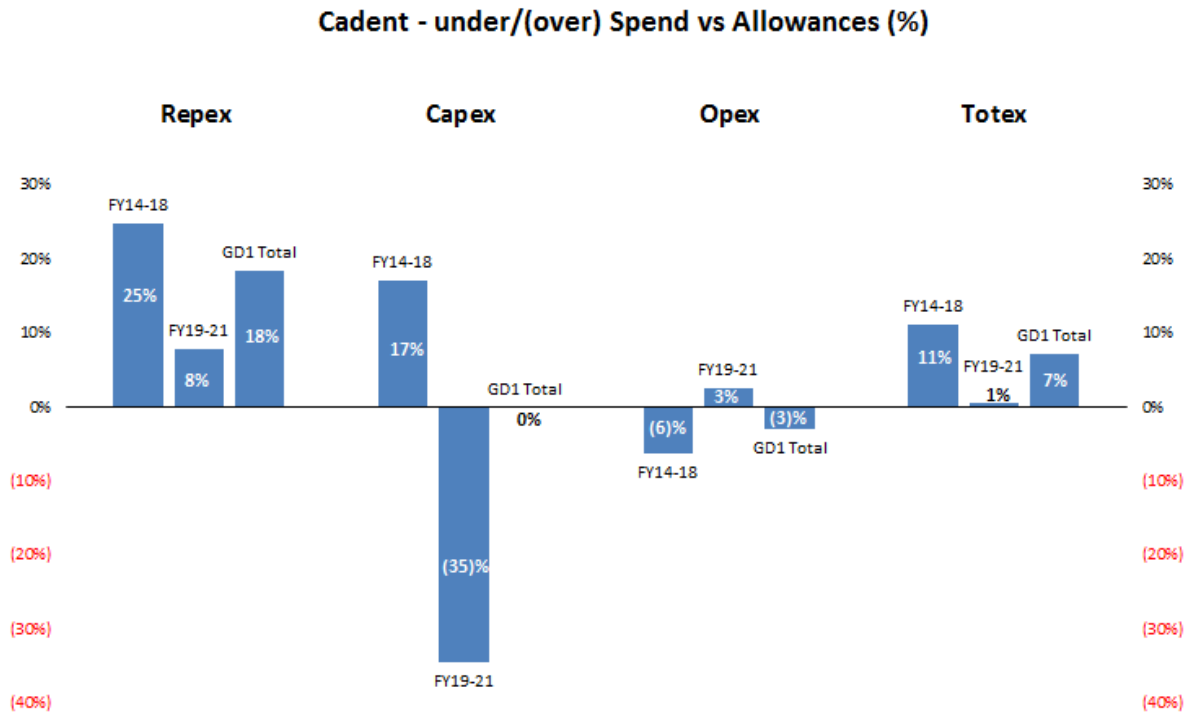
We are focussed on delivering value for our customers and so offsetting the above investment forecast increases and our Opex forecast has reduced significantly by £115m (-3.1%) since last year's forecast. Indeed, the forecast for 2020/21, the last year of RIIO-GD1, has been reduced further this year and we now seek to deliver an ambitious 15% improvement in Opex in our first four years of operating as a standalone business, driving value for our customers through into RIIO-GD2. As a new business we have challenged all aspects of our business to identify and commit to deliver transformational and on-going business improvement efficiencies in real terms – this has contributed to c£60m of the

reduction from last year's forecast. In respect of the Smart metering rollout, our continued dialogue and engagement with the industry has seen a further reduction in the assumed intervention rates (from 4.5% to 3%) of installations which impact on the workload for our emergency and repair teams – equating to c£40m in Opex reductions. Our Opex forecasts do however include some additional asset health expenditure in relation to depth of cover remediation and workload in respect of Multiple Occupancy Buildings.

The following table outlines our expected sources of Totex 8-year efficiencies:

		8 year efficiencies (£m 17/18 prices)				% of Totex
		Repex	Capex	Opex	Totex	
Innovative long term contracting approach	• More innovative contract approach to optimise and crystallise keener prices from 8 year contracts with set work aligned with incentives to customers • Economies of scale (merging 6 contracts to 2 and consolidating locations) • Moving Design into GDSPs (instead of duplication/hand-offs in old model) • Single delivery unit for planned work (stranding of resources in opex)	185	0	-75	110	18%
Improved design and use of best practice	• Cost efficiencies from improved detailed design • Increased use of best practice/existing techniques improving abandon/lay ratio level of insertion and live insertion	230	0	0	230	37%
Optimal pipe selection	• GDSP optimising a fully risk based selection criteria to deliver our risk removed primary output • This has been partially offset by more services as we have focussed on the riskiest pipes	205	0	0	205	33%
Within period innovation	• GDSPs continuous improvement plans to deliver • Rephasing of workload into last four years to drive more efficient delivery • Direct Opex process improvements driving end to end efficiencies from our new performance excellence initiative	125	25	120	270	40%
Optimal network planning	• Driving nominated load requirements for interruptions customers down (c 20%) • Improved network analysis • Underlying capacity demand reducing faster than business plan – slower economy/greater energy efficiency	0	25	0	25	4%
Smart	• Rollout of smart metering. Impacts reduced following working with industry, but still expect significant impacts. UM claim expected to be made January 19 (at Ofgem request)	0	0	-45	-45	-7%
Business support costs	• At start of RIIO-GD1 found to be off pace with this element of Totex • Gap to allowance historically – in part due to centralised nature of NG structure plus centralised model benefiting lower operational costs. • As a new separate business we are tailoring our business support costs and driving through process improvements (including IS) that are reducing costs to below allowances by 2020/21	0	-50	-105	-155	-25%
	8-Year Totex efficiencies* *****Efficiencies are quoted against the regulatory allowances as stated in RRP table 2.2*	**745**	**0**	**-105**	**640**	
		18%	**0%**	**-3%**	**7%**	

The chart below shows how we have performed against our allowances during the first 5 years of RIIO-GD1 and how we expect to perform in the remaining 3 years.



For Repex, the 25% efficiency delivered to date is driven by a combination of our innovative long term contracting approach and our strategy to optimise selection of pipe based on risk removed. The lower efficiency forecast for future years is reflective of the upward unit cost pressures as described above and a catch-up in the phasing of workload, but is further compounded by the complexity of the remaining larger diameter mains replacement workload yet to be delivered in the programme. Despite these higher cost forecasts for the future we still expect to deliver efficiencies against our allowances in the remaining RIIO-GD1 period and hence still continue to deliver on-going benefits for our customers.

For Capex, the 37% overspend against allowances in the 3 remaining years of RIIO-GD1 largely reflects the back-end phasing of the workload associated with delivering the Asset Health Network Output Measures (NOMs) which form part of the Risk Monetisation targets (the methodology for which has only recently been developed in conjunction with Ofgem). By the end of RIIO-GD1 we expect to have delivered all of our regulatory outputs, and in doing so, will have spent marginally above our allowances – as explained above this is a consequence of the higher unit cost pressures that are materialising in the wider market.

For Opex, at the start of RIIO-GD1 we were found to be less efficient than our independent GDN counterparts. Since becoming a standalone company we have delivered significant efficiencies as evidenced in our FY18 outturn. Furthermore we are committed to delivering on-going efficiencies in the future via transformation and embedding a culture of continuous improvement and challenge over our processes – this is expected to deliver a forecast spend over the next 3 years which is (for the first time) lower than our Opex allowances. This downward trajectory in the remaining RIIO-GD1 period not only positions us better relative to the other GDNs, but also means we can transition well into the challenges of RIIO-GD2 and allow us to continue to drive benefits for our customers.

4. Performance Summary

In this section of the report, we summarise performance against RIIO-GD1 measures of success, categorised by the four building blocks of the framework: Outputs, Incentives, Innovation and Revenue

Outputs

The following section highlights our performance on the key outputs shown in the Output Summary table in Section 2.

1. Safety

Responding to gas emergencies

Measure: 90% of calls answered in 30 seconds

We operate the National Gas Emergency Service contact centre, taking calls and giving safety advice on behalf of all gas networks. In 2017/18 we answered 1.952 million calls of which 92.03% were answered within 30 seconds, this was despite the challenging weather conditions experienced at the end of February.

The end of February saw the UK hit by a cold wave named the 'Beast from the East' by the media, which brought plummeting temperatures and heavy snowfall to large swathes of the country. This was also combined with Storm Emma in the south-west at the beginning of March.

Demand for gas was the highest seen for more than a decade. 4,500 gas escapes were reported, which is around 290% more than on a typical winter's day

At the start of the bad weather (Thursday 1 March) we received more than 40,000 calls in our customer contact centre. The following day we received around 36,000, which was five or six times the typical volumes on the Saturday and Sunday. To put this in perspective, our busiest day in the whole of the previous year was around 8,500 calls.

One reason for the incredible volume was that several gas supplier contact centres were closed or limited by their staff's inability to get to work and gas safe engineer resources were overwhelmed. Customers with boiler faults didn't know who else to call, so came through to Cadent on the gas emergency number. At peak times, around 70% of the calls were not genuine gas emergencies, and 50% related to condensing gas boilers. We supported suppliers by doing what we could to get messages to their customers, explaining to people how to de-ice their boilers. While broken appliances aren't classed a gas emergency, cold homes in plummeting temperatures could have put people at risk of harm. We reprioritised our operations in order to protect life and focus on vulnerable customers and despite the incredible call volumes, achieved the annual 90% level of service for answering calls.

Emergency response

Measure: Controlled gas escapes - (attendance in 2 hours)
Measure: Uncontrolled gas escapes – (attendance in 1 hour)

We provide a gas emergency service which keeps people safe and warm in their homes and businesses. We respond to internal and external gas escapes and also to potential cases of carbon monoxide poisoning from appliances. Our average response time in 2017/18 was 35 minutes.

During the year we exceeded the 97% standards of service for emergency response in all of our networks and attended 423,570 reported gas escapes. The majority of this work relates to emergencies involving customer appliances, internal pipes and meters and not Cadent's assets.

Our emergency response vehicles are all equipped with GPS systems that enable us to confirm accurate arrival times for the 1-hour and 2-hour emergency standards. We believe that we are the only Gas Distribution Network to have this level of assurance for these emergency standards of service.

Repairing network escapes

Measure: Proportion of Gas Escapes Prevented Within 12 Hours

In 2017/18 we attended 84,134 emergencies directly related to our network which is a decrease of 7% compared with 2016/17. We have continued to meet our targets in all four of our networks.

The comparisons in the table below show that we are ahead of target.

Network	2015/16	2016/17	2017/18	RIIO-GD1 Final Proposals
East of England (EofE)	52%	47%	49%	42%
London (Lon)	52%	46%	45%	43%
North West (NW)	51%	50%	50%	34%
West Midlands (WM)	51%	49%	48%	36%
Cadent (Average)	52%	48%	48%	42%

Repair risk

We have continued to deliver our Network Repair Risk commitments in all of our Networks as outlined in the table below.

Network	Network repair risk (millions) 2015/16	Network repair risk (millions) 2016/17	Network repair risk (millions) 2017/18	Target
EofE	4.68	4.82	4.74	5.17
Lon	4.32	4.17	4.50	4.62
NW	4.71	4.37	4.63	4.91
WM	2.31	2.11	2.30	2.50

Major accident prevention

Our current Gas Safety (Management) Regulations Safety Case is approved by the HSE as required by our Licence. There were no process safety related incidents that resulted in injuries or significant property damage during 2017/18.

Sub-deducts networks off-risk

Sub deduct networks are linked to historical asset arrangements that are no longer installed. Sub deduct networks are those that are located on a network downstream of the gas transporter. The work in this area is focussed on determining ownership of the pipework that runs beyond the primary emergency control valve and if necessary engineer out or refurbish or replace the sub-deduct network where the premises owner does not wish to retain liability for the asset.

We are continuing to remove the outstanding sub deduct networks and we are committed to resolving all these sites within the RIIO-GD1 period.

During 17/18 we successfully completed a further 64 sites which represents 7% of the total workload with 81% of the total workload completed across the price control period. We are now managing more complex Sub Deduct Arrangements (SDA's) and have developed processes, plans and resources to meet the completion target by the end of RIIO-GD1 period.

The table below shows the number of sites established after survey, along with any new sub deducts that have been identified throughout the price control period.

	Starting Population (x)	Additions 2017/18 (y)	Removals 2017/18 (z)	Revised Population (FF)	Completed Workload 2013/14 (AA)	Completed Workload 2014/15 (BB)	Completed Workload 2015/16 (CC)	Completed Workload 2016/17 (DD)	Completed workload 2017/18 (EE)	O/S Workload
EE	140	1	0	141	66	37	7	2	3	26
LO	241	2	0	243	125	54	14	9	9	32
NW	148	0	1	147	63	15	19	7	6	37
WM	441	5	0	446	183	54	38	35	46	90
TOT	970	8	1	977	437	160	78	53	64	185

Iron mains risk reduction

This element of the Safety output is the amalgamation of a number of secondary outputs that include: length of iron mains off risk, number of occurrences of gas in buildings caused by iron mains; number of pipe fractures & corrosion failures from iron mains and no. of incidents.

The Iron Mains Risk Reduction Programme (MRPS) addresses the failure of 'at risk' iron mains within 30m of a building and the consequent risk of injuries, fatalities and damage to buildings.

Under RIIO-GD1 we have two key outputs that measure our delivery of The Iron Mains Risk Reduction Programme. The primary output of risk removed and the secondary output of length of main off risk. Against the primary output, we remain ahead of the eight year linear target in all networks due to our focus on removing the highest risk mains at the start of the period, however against the secondary output of length of main off risk, we are behind an eight year linear target although have plans in place to accelerate delivery.

The table below highlights our progress towards the 8 year target for each network

Network	Risk reduction 8 year commitment	Proportionate annual risk reduction for one year	5 Year target risk reduction	Actual risk reduction achieved		Risk removal outperformance		% of the 8 year commitment removed to date
				2018	5-year total	2018	5-year total	
EoE	192,567	24,071	120,354	23,773	166,632	-1%	38%	87%
Lon	102,281	12,785	63,926	11,884	65,817	-7%	3%	64%
NW	154,428	19,304	96,518	16,183	138,498	-16%	43%	90%
WM	131,394	16,424	82,121	15,012	96,673	-9%	18%	74%
Cadent	**580,670**	**72,584**	**362,919**	**66,852**	**467,620**	**-8%**	**29%**	**81%**

Length of main off risk

In 2017/18 we were targeting an increase in our Tier 1 mains replacement however the length of main replaced decreased approximately 4% from 2016/17. This decrease is a result of an unprecedented increase in infrastructure and construction activity in the UK, leading to significant resource constraints, major skill shortage and market pressures. This growth in infrastructure can be shown through customer driven diversionary works, which in two of our networks has increased more than 300% since 2013/14. Delivery has then been further impacted by poor weather and reduced scope of planned innovation. This has led to our overall mains replacement programme being 7% behind the linear target. Although, this position is not ideal we recognise the challenge and are addressing this with our Strategic Partners.

The table below shows our 2016/17 and 2017/18 decommissioning performance (including diversions). Please note mains laid performance is directly linked to our decommissioning performance however as we are measured on decommissioning/replacement performance, the table below reflects decommissioning.

	2016/17					2017/18				
Actuals	**EoE**	**Lon**	**NW**	**WM**	**Total**	**EoE**	**Lon**	**NW**	**WM**	**Total**
T1 Iron	534	321	381	336	1571	502	318	356	283	1458
T1 Steel & Asbestos	14	16	20	16	65	22	15	48	20	105
Total Tier 1	**547**	**337**	**400**	**352**	**1637**	**524**	**333**	**404**	**303**	**1563**
T2 & 3 Iron	12	26	19	18	75	20	21	20	16	76
T2 & 3 Steel & Asbestos	3	1	1	4	9	7	1	1	1	11
Total Tier 2 & 3	**15**	**27**	**20**	**22**	**85**	**27**	**21**	**21**	**17**	**87**
Total Tier 1, 2 & 3	**562**	**364**	**420**	**374**	**1721**	**551**	**354**	**425**	**320**	**1650**
Other	9	7	12	5	33	10	6	13	4	33
Total T1,2,3 & other	**572**	**372**	**433**	**379**	**1755**	**560**	**360**	**437**	**324**	**1682**

Total discrepancies within the table are due to rounding

In addition to the challenges around our mains replacement programme, we are seeing an increased volume of customer driven diversionary work particularly in our East of England and London networks, through key projects such as the A14, Norwich Road Widening Programme and Thames Tideway. Although, this is not fully shown in net diversions costs, the increase in diversionary work across these two networks is more than 300% since 2013/14, which is creating further pressure on our Strategic Partners and the market. The recovery plans developed consider resource requirements across all work types based on known volumes/projects, however we will need to continually monitor volumes and availability of resources should work volumes continue to grow at the same rate.

Services workload

The overall volume of service replacement is directly proportional to Tier 1 Policy mains replacement. The reduction in service workload is largely attributed to lower mains replacement volumes in 2017/18. The change in service replacement volumes has directly impacted our planned interruptions performance. Cumulatively, we remain significantly ahead of Ofgem's target, and replacement of services early will deliver improved safety for customers.

The table below includes a count of all domestic and non-domestic services replaced including those re-laid after escape, as well as service pipes re-laid in association with mains replacement.

	2016/17					2017/18				
Services Actuals	**EoE**	**Lon**	**NW**	**WM**	**Total**	**EoE**	**Lon**	**NW**	**WM**	**Total**
MRP Relay	23,836	25,934	25,006	23,299	98,075	22,092	25,321	23,077	19,771	90,261
MRP Transfer	23,735	9,955	12,800	12,623	59,113	25,163	8,774	10,974	9,670	54,581
Total MRP Associated Services	**47,571**	**35,889**	**37,806**	**35,922**	**157,188**	**47,255**	**34,095**	**34,051**	**29,441**	**144,842**
Non-MRP Services (Metallic Replacement)	5,988	6,060	6,545	3,714	22,307	5,173	5,367	5,730	3,034	19,304
Total Services	**53,559**	**41,949**	**44,351**	**39,636**	**179,495**	**52,428**	**39,462**	**39,781**	**32,475**	**164,146**

Gas in buildings

We have seen a decrease in 'network gas in buildings'. This is in line with the reduction of 'public reported escapes' and 'relay after escape' that we have seen in 2017/18

Year	EofE	Lon	NW	WM
2014/15	1,688	2,793	1,710	1,267
2015/16	1,778	3,140	1,854	1,264
2016/17	1,935	3,180	1,900	1,388
2017/18	1,744	3,008	1,727	1,347

Fractures and corrosion

As a result of our mains replacement work (as well as milder weather conditions) the volume of fractures on our network continues on a downward trend. During 2017/2018 we completed 2,918 mains fractures and corrosion repairs which is an overall decrease of 8% compared to 2016/2017.

Actual fracture numbers this year remain lower than the forecast that was submitted in the RIIO-GGD1 submission. The rationale for this is that the weather was generally mild, during what has been described as a mainly average winter. The only period of severe weather was at the end of February but this does not appear to have had any significant impact upon the overall trend. In light of the downward trend across the period we have amended the forecast for the remaining years.

The table below shows the volume of fractures & corrosion across the RIIO-GD1 period to date.

F&C Trends	EofE	Lon	NW	WM
2014/2015	1,213	308	909	703
2015/2016	983	308	819	614
2016/2017	1,246	405	848	666
2017/2018	1,062	343	798	715

2. Reliability

Achieving 1 in 20 peak capacity standard

As outlined in our emergency call handling report above despite the severe weather at the end of February we ensured that adequate capacity was available to meet a level of demand that is not likely to recur more often than once in twenty years.

During 2017/18, despite a number of our networks experiencing demands greater than the predicted “1 in 20” peak day requirement in the winter, we are continuing to forecast that peak day demand for our networks will fall from the predictions from 2016/17. In general, this continues the trend seen since the start of the RIIO-GD1 period but the reduction is slowing.

This forecast demand directly drives our NTS bookings, and customers have benefitted from this thanks to reduced bookings across our networks and our continued sharing of the gains from the capacity incentives with them.

Maintaining Operational Performance

This element of the Reliability output is based upon the following secondary deliverables: Number & value of offtake meter errors, Duration of telemetered faults, PSSR fault rate, Gas holder demolition and Capacity Utilisation

Response to telemetered faults

We are responsible for monitoring and reporting the accuracy of the meters we use to measure the gas flowing from the National Transmission System into our network. During the period 1st April 2017 to 31st March 2018 no meter errors have occurred in any of our networks and therefore all networks have been 100% free of errors in the energy throughput. This exceeded our target of 99.9% meter free error of energy throughput and is an improvement on last year’s performance.

In addition 3 out of 4 of our networks have outperformed in the time taken to resolve telemetered faults (compared to the 2013 baseline), we are continuing to closely monitor all unresolved faults so that performance improves across all networks and is in line with our forecast.

PSSR faults

During the year we have seen the continuation of the higher levels of PSSR A2 faults, first experienced in the 16/17 period. This followed a review of the inspection and

reporting process for the management of PSSR and a more rigorous, consistent approach to the classification of faults. These changes improve confidence in the reporting process, provide greater assurance of the safe operation of our networks and this revised approach has been positively received by HSE in 2017 during their PSSR audit and we remain fully compliant with the requirements of PSSR.

In 2017/18, our performance against the measure slightly improved but we have missed the targets we set ourselves. For North London and West Midlands the deterioration is attributed to the installation of new slam-shut control cabinets (project intended to replace aging cabinets). A root cause analysis and trials of alternative pressure switches are in progress to improve the performance. As a result of this we have paused the replacement programme pending investigation outcome.

A number of measures were identified at the end of 16/17 to improve performance and these continue to be implemented. Their impact versus the forecast has therefore not yet been fully realised. The reassessment of set points continues and is planned to reduce the number of faults associated with protective devices.

Whilst our in-year performance does not meet the 16/17 revised forecast our plans are expected to continue to deliver improvements over the remaining RIIO-GD1 period in line with our forecast.

	Final proposals							
	2014	2015	2016	2017	2018	2019	2020	2021
EOE	8.0%	8.0%	7.0%	6.0%	6.0%	6.0%	5.0%	5.0%
LN	9.0%	9.0%	8.0%	8.0%	7.0%	6.0%	6.0%	5.0%
NW	18.0%	16.0%	16.0%	15.0%	13.0%	13.0%	12.0%	11.0%
WM	6.0%	6.0%	6.0%	5.0%	5.0%	5.0%	5.0%	5.0%

	Actuals							
	2014	2015	2016	2017	2018	2019	2020	2021
EOE	5.0%	5.4%	6.7%	10.4%	7.5%	6.1%	5.5%	5.0%
LN	4.0%	4.4%	4.4%	6.5%	13.4%	5.3%	5.2%	5.0%
NW	11.0%	11.4%	11.3%	22.4%	18.6%	13.3%	12.1%	11.0%
WM	5.0%	5.4%	4.7%	13.1%	15.4%	6.6%	5.8%	5.0%

Gas holder demolition

We continue to make strong progress in the delivery of our RIIO-GD1 gas holder demolition output commitment, removing an additional 14 gas holders in 2017/18. This means that at year 5, 83% of the output commitment has been delivered. It is anticipated that this will reach 95% by year 6. During this year we also had opportunity to remove 4 holders scheduled for removal in the next price control period.

RIIO-GD1 Output Delivery

GD1	Actual	Actual	Actual	Actual	Actual	Forecast	Forecast	Forecast	Forcast
Actual / Forecast	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
East of England	9	5	9	5			1		29
London	1	10	3	5	10	4		1	34
North West		5	9	6	4	8	3		35
West Midlands			4						4
Total	10	20	25	16	14	12	4	1	102

Capacity utilisation

All networks have seen a slight increase in the use of baseline capacity in order to meet the demand predicted in last year's demand forecast.

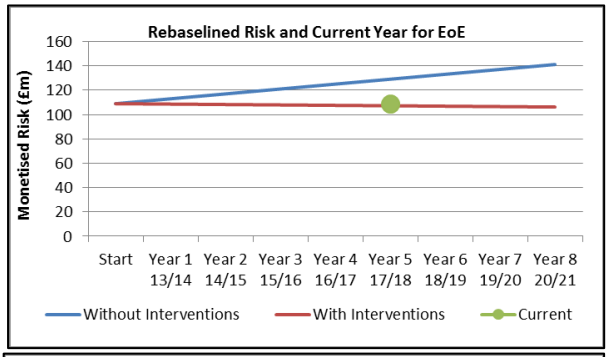
Overall there has been very little change in utilisation from the previous year, however there continues to be localised variations due to changes to the downstream network. We continue to review and update our models using actual performance measurements to assess these changes and where potential capacity constraints have been identified the downstream network will be reconfigured with demands transferred to adjacent sites which have spare capacity.

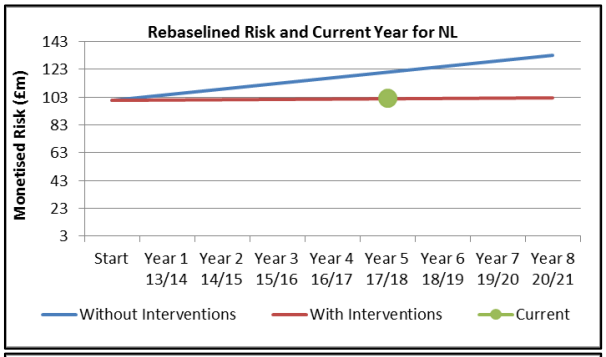
Health, criticality & risk metrics - 2018 current position and forecast in relation to rebased targets

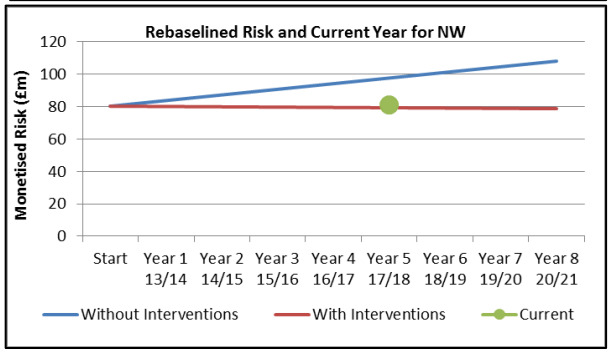
During the course of 2017/18 we have been working with Ofgem to agree and baseline the risk monetisation methodology (more details about this are provided in Appendix 5). The agreed methodology allows networks to report on a consistent basis the consequences of their asset health investment programme with a target risk reduction for each network to deliver over the RIIO-GD1 period.

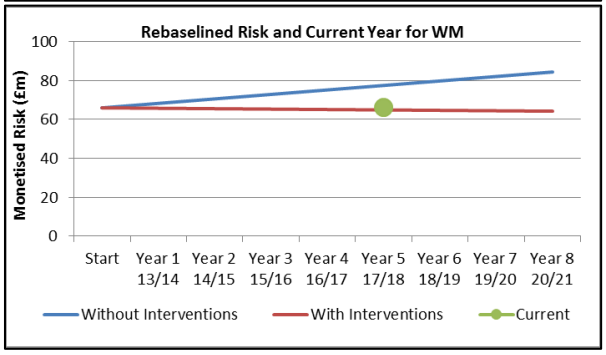
The charts below show risk deterioration evenly profiled over the RIIO-GD1 period and the forecast risk outturn position, the difference between these being the risk delta. The charts also show the risk position for each network at the end of year 5.

In 16/17 we ramped up our asset health programme of work. We continue to increase our target workload within the Asset Health programme until the end of RIIO-GD1. By delivering this programme of work, we believe we will hit our monetised risk targets across each network. Only in year eight, when all investment has been delivered, will progress against risk delta be truly measurable.









NB without intervention refers to no action being taken on Cadent assets

Loss of supply – Network Reliability

Overall our network reliability was 99.996% taking into account planned and unplanned interruptions.

The table below gives some key performance statistics for 2017/18:

	EofE	Lon	NW	WM
No. of customers (millions)	4.0	2.27	2.68	1.96
Overall reliability	99.998	99.989	99.998	99.998
% Customers interrupted (Planned & Unplanned)	2.0	2.7	2.4	2.5
Average hours interrupted* (Planned & Unplanned)	6.2	6.8	5.7	5.9

**excluding incidents and risers to multiple occupancy buildings*

Rebased loss of supply targets

As a result of Ofgem's consultation earlier this year the following table shows the new interruptions targets that were implemented from 21st March 2018 for the remainder of the price control period.

		EofE	Lon	NW	WM
Planned Interruptions	Volume	585,934	472,436	476,237	377,826
	Previous target	657,504	409,561	551,735	401,054
	Duration (millions of minutes)	213	191	170	153
	Previous target	307	256	286	200
Unplanned Interruptions	Volume	99,608	100,083	91,566	60,506
	Previous target	106,922	88,605	101,591	70,575
	Duration (millions of minutes)	108	428	63	47
	Previous target	50	111	78	48

The following sections highlight our performance in relation to the new targets.

Loss of supply – number and duration of planned interruptions

Planned interruptions occur when service pipes are replaced or transferred or there is work to maintain equipment, particularly service governors.

The improvement in 17/18 performance for planned interruptions has been encouraging and we expect this to continue over the remainder of the period.

Interruption volumes in 2017/18 have fallen by just over 6% overall. We acknowledge that reducing interruptions is important to our customers and therefore we have increased the use of live insertion and live service transfers which has meant that fewer interruptions are required per km replaced. There has also been a reduction in mains replacement work completed in the year, which will also have contributed to this

reduction. The actions we have taken have also impacted durations which have reduced by just over 12% across Cadent.
The tables below indicate how performance is improving across our 4 networks:

Volumes

Number of planned customer interruptions	2015/16	2016/17	2017/18	Variance from previous year %
EoE	76,135	66,502	66,895	+0.59%
Lon	58,032	54,996	51,118	-7.05%
NW	67,426	55,620	52,967	-4.75%
WM	61,702	50,812	43,082	-15.22%
Cadent	**263,295**	**227,930**	**214,062**	**-6.08%**

Durations

Duration of planned customer interruptions	2015/16	2016/17	2017/18	Variance from previous year %
EoE	26.60	22.63	21.66	-4.29%
Lon	21.57	21.56	18.65	-13.50%
NW	22.57	17.04	15.56	-8.64%
WM	22.23	19.13	14.35	-24.98%
Cadent	**92.97**	**80.35**	**70.22**	**-12.61%**

Cumulative volumes & durations vs target

		EofE	Lon	NW	WM
Planned Interruptions	Volume ***cumulative to 17/18***	359,529	279,484	286,260	230,663
	8 year target	585,934	472,436	476,237	377,826
	Duration (millions of minutes) ***cumulative to 17/18***	129	116	99	89
	8 year target	213	191	170	153

Loss of supply – number and duration of unplanned interruptions

In January this year Cadent responded to Ofgem's consultation on revised reliability (loss of supply targets for RIIO-GD1), where we raised concerns regarding the targets proposed for unplanned interruptions particularly in our London network as a result of Multi-Occupancy Buildings (MOBs) in this area and local authority sensitivity following the Grenfell fire tragedy. The basis for this is the inherent complexity of restoring supply associated with, amongst other things, planning restrictions, managing agents, local authorities and property owners. This is particularly true of our North London and London districts of our East of England networks where MOBs density is an order of magnitude greater than any other gas network.

We are pleased that Ofgem recognised a need to reset some of the outputs to reflect challenges of MOBs, however, targets have not taken into account the subsequent impact of the response to the Grenfell Tower fire tragedy on volume of work and availability of resources.

The following table highlights our performance for unplanned interruptions (incl MOBs but excluding major incidents)

Network	No. Unplanned interruptions			Duration Unplanned interruptions (million minutes)		
	2015/16	2016/17	2017/18	2015/16	2016/17	2017/18
EofE	13,451	11,174	11,763	10.4	10.2	12.4
Lon	12,661	10,498	10,421	68.6	63.4	116.6
NW	12,887	10,348	11,286	7.8	9.3	7.3
WM	8,338	6,388	6,089	5.2	4.7	8.4

Cumulative volumes & durations vs target

		EofE	Lon	NW	WM
Unplanned Interruptions	Volume ***cumulative to 17/18***	64,557	61,924	58,383	38,022
	8 year target	99,608	100,083	91,566	60,506
	Duration (millions of minutes) ***cumulative to 17/18***	61.0	344.9	43.1	35.2
	8 year target	108	428	63	47

To put this into context we have provided a breakdown of our performance with and without MOBs, to outline the actions we are taking and also to illustrate that performance for unplanned interruptions (excluding MOBs) is improving across our networks.

Unplanned Interruptions – excluding MOBs

During 2017/18 there was an incident in the East of England that impacted on the actual durations causing them to be 0.6 million minutes above the target for 2017/18. Excluding this incident in the East of England, levels of interruptions were below target for all networks. A number of initiatives were implemented and developed that have helped to improve the interruptions performance during the year and the forecasts show this trend continuing for the remaining years.

Network	Total Volume (Excl Incidents)	Total Duration (million mins) (Excl. Incidents)	Average Duration (Mins) (Excl. Incidents)
EofE	11,499	5.6	483 (8 hrs)
Lon	8,573	5.5	647 (11 hrs)
NW	10,987	6.2	568 (9 hrs)
WM	5,938	2.9	493 (8 hrs)

Unplanned Interruptions Overview - MOBs

In 2017/18 Cadent delivered the following performance related to the Unplanned Interruptions output, with regards to multi-occupancy buildings:

Network	Total Volume	Total Duration (million mins)	Average Duration (Hrs)	Average Duration (Days)
EofE	264	6.8	432	18
Lon	1,848	111.1	1002	42
NW	299	1.1	59	2
WM	151	5.5	603	25

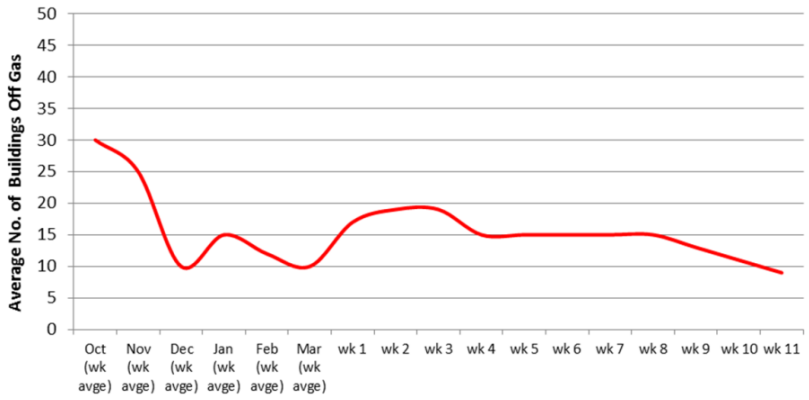
It should be noted that for West Midlands 3.1 million minutes were attributable to a block of 16 properties where significant technical difficulties were encountered with the fabric of the building which comprised a high proportion of glass. With the exception of this building the average interruption duration in this network would equate to 292 hours (12 days).

The first quarter of 2017/18 saw continued focus on embedding new techniques into front line operational functions, these included:

- Rapid repair solutions (polymer filled repair clamp/self-amalgamating tape);
- Riser and component remediation solutions (iSeal/ePipe);
- Preventive riser coating solutions; and
- Revised operating practices, such as the utilisation of Cadent Repair Teams to undertake 'in ground' work and ongoing performance management building on the frameworks reported in the previous year.

The benefits of this can be seen in the graph below, which shows the average number of buildings experiencing an interruption to the gas supply.

Number of Buildings with an Interrupted Gas Supply (Quarter 1):



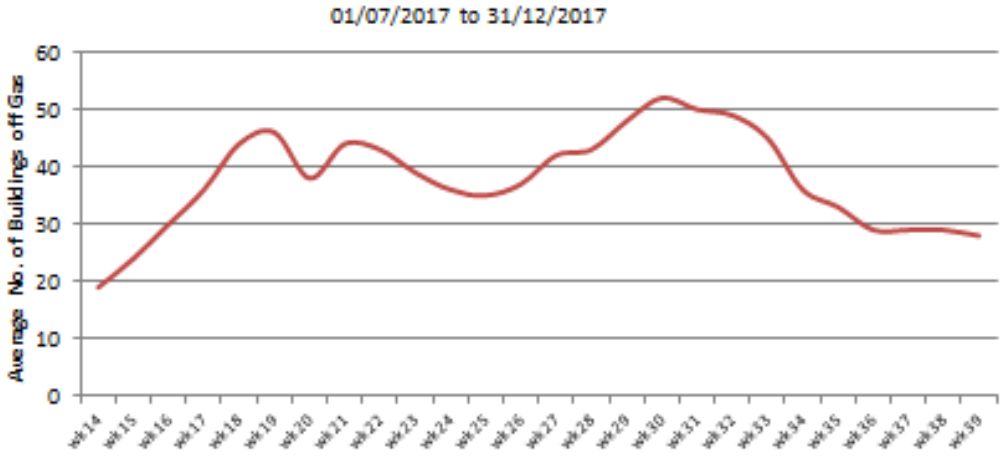
Cadent has experienced unprecedented focus from a variety of stakeholders around gas supplies into multi occupancy buildings, whilst the impact has been most pronounced in North London, implications have been felt in all networks.

In the second quarter (following the fire) Cadent:

- Responded to 199 Local Authority enquiries, resulting in 147 additional surveys;
- Isolated gas supplies to 3 large high rise buildings following instruction from fire brigade and other government agencies;
- Held multiple complex discussions with building owners (both Local Authorities and Private Landlords) to allay concerns around gas network compliance and safety, in order to maintain a safe supply of gas to customers, in all instances Cadent managed complex stakeholder relationships and the safe continuity of supply.

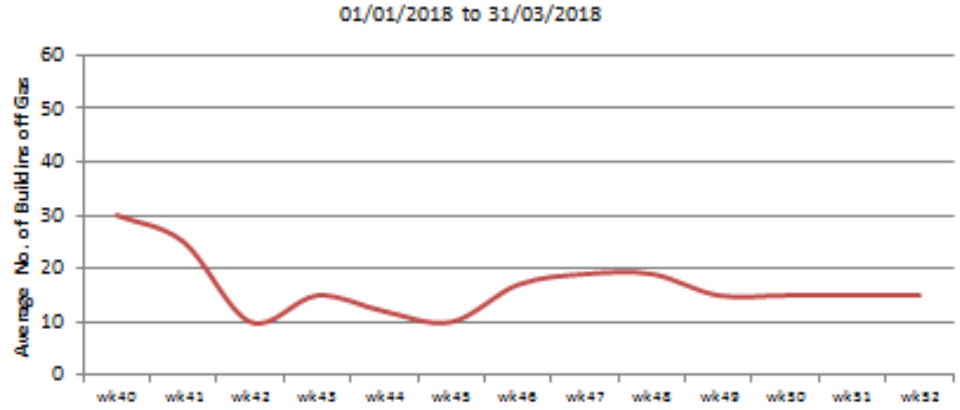
The above, coupled with a pull on internal resource to support multiple stakeholder requirements in the weeks and months following the fire placed significant pressure on our operational ability to restore gas supplies that had been interrupted in MOBs. The impact of heightened stakeholder interaction and focus resulted in an increase in the volume of gas supplies being interrupted in quarters two and three, which is illustrated in the following graph.

Number of Buildings with an Interrupted Gas Supply (Quarters 2 and 3):



During the third and into the fourth quarter Cadent stabilised the resource position through an injection of addition resource by TRIIO (the MOBs construction division of the organisations).

This period also saw the external environment stabilise with a reduction in engagement from Local Authorities and Private Landlords. It is worth noting that this may change as both the Dame Judith Hackitt review of building and fire regulations and the Grenfell Tower fire Public Inquiry findings move into the implementation phases. The combination of these supply and demand factors can be seen in the graph below.



We are working to improve our asset data records for multiple occupancy buildings (as discussed with Ofgem through the first half of 2018). In response to this challenge Cadent is currently working through a significant programme of high-rise building surveys, which is against a back drop of typical annual survey programme volumes of approximately 450 buildings.

This programme of survey work presents an increased risk to Cadent delivering the 2018/19 unplanned interruption duration targets for North London, however, Cadent is committed to continued engagement with Ofgem regarding this issue.

With such continued uncertainty around multi-occupancy buildings, and the outcomes of the various inquiries particularly in London, we feel unable to provide unplanned volumes or durations forecasts for this network this year for the remaining RIIO-GD1 period, but will continue to review the position in light of developments.

3. Connections

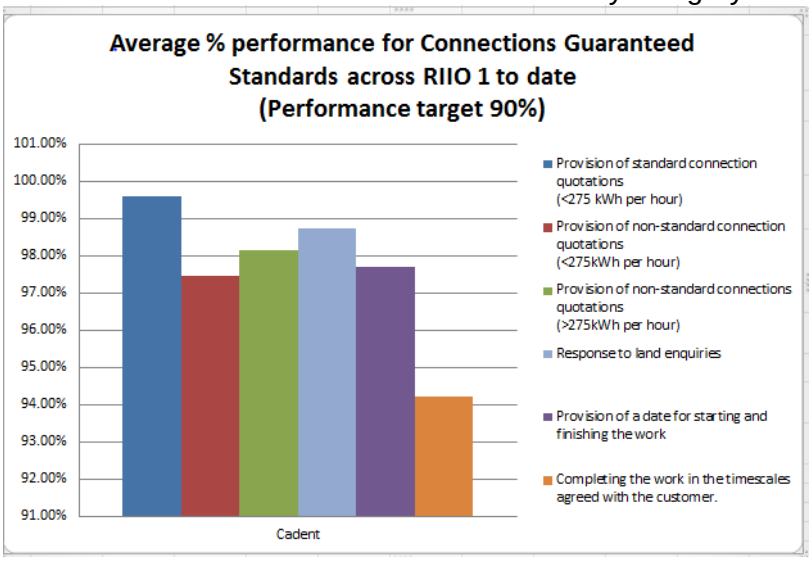
Guaranteed standards of performance

Cadent provides a range of connections services and we continue to encourage competition to promote customer choice reducing costs and enhancing customer service. During 2017/18 we exceeded the 90% target for each standard across all of our networks and paid compensation as required to the individual customers who did not receive the level of service they are entitled to.

The table below shows our performance for the connections standards for 2017/18.

Activity	EofE	NL	NW	WM
Quotation performance	**2017/18**	**2017/18**	**2017/18**	**2017/18**
Provision of standard connection quotations (<275 kWh per hour)	99.91%	99.87%	99.96%	99.98%
Provision of non-standard connection quotations (<275kWh per hour)	95.55%	94.24%	96.83%	96.83%
Provision of non-standard connections quotations (>275kWh per hour)	97.11%	96.28%	97.97%	98.32%
Supporting customers				
Response to land enquiries	98.75%	98.76%	99.04%	99.08%
Perfomance relating to our connections work				
Provision of a date for starting and finishing the work	97.99%	94.74%	99.24%	98.00%
Completing the work in the timescales agreed with the customer.	94.01%	91.95%	96.23%	92.68%

The graph below illustrates that across the price control period and across all networks we have exceeded the 90% standard for connections in every category



Introduce distributed gas entry standards (scmh connections)

Bio-methane is a renewable gas made from biodegradable matter such as food waste, sewage or energy crops. It has a key role to play in a low carbon economy. Our commitment has continued this year to focus on making it as simple as possible for biomethane producers to connect to our network. During 2017/18 we connected 1 new biomethane project, which was our first in the London Network. This brings the total number of connections since the start of the RIIO-GD1 period to 29 with the ability to deliver up to 22,353 scmh (2.03 TWh of energy per annum) of renewable gas into our network.

Performance/Actuals for Biomethane Connections

RIIO Plan	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
No. projects connected (accum target)	3	8	15	24	35	48	63	80
No. projects connected (accum actual)	1	10	22	28	29			
Variance (accum)	-2	2	7	4	-6			
TWh per annum (accum target)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4
TWh per annum (accum actual)	0.07	0.64	1.44	1.78	2.03			

In 2017/18 we continued to offer a number of connections with variable flow to enable connections in capacity restricted areas. From the start of the RIIO-GD1 period we have commissioned nine such sites to first phase with six proceeding to final commissioning by the end of 2017/18. This year we have also supported our first existing biomethane plant to increase its injection into the gas grid by up to 67%, we achieved this in collaboration with the customer and through reconfiguration of the local network.

The risks to future volumes around uncertainty in respect of the Renewable Heat Incentive (RHI), still exist, however with the introduction of new regulations from 2018/19 we now have a significant number of accepted projects on the horizon for connection in 2018/19.

4. Customer Service

Measure: Planned interruptions survey
Emergency response and repair survey
Connections survey

In 2017/18 we separated from National Grid and created Cadent. We took this opportunity to re-focus and re-energise the organisation around the importance of providing great customer experiences. As part of this, we created a new directorate, Customer Performance, assigning a single point of accountability for Cadent's customer strategy, along with direct management of the Customer Centre, end-to-end performance management teams and the Strategic Change team; directly aligning customer insights into the prioritisation of change activities. Over the year, this, along with the initial implementation of our customer strategy has delivered customer satisfaction improvements in 9 of the 12 categories and seen complaints reduce by over 34%.

Cadent's customer strategy has been developed following extensive benchmarking with other organisations within and outside of our industry in order to identify opportunities to improve our current customers' experience levels. Additionally we focussed inwards looking at the main blockers that our current operating model, processes and systems present to us. The strategy is based on 6 key areas: designing an operating model around customer journeys, with local accountability for customer outcomes; real time customer feedback; big data and customer analytics (to enable segmentation and tailored approaches), omni-channel communications, aligned incentives and performance management across the entire supply chain and investment in technology to enable greater customer experiences.

The following sections detail our performance levels in 2017/18 for the three service lines we measure customer satisfaction against, showing the level of improvement made over RIIO-GD1 and detailing some of the rationale to explain the improvements we have seen and where we are focusing on going forwards to deliver further improvements.

Emergency Response and Repair

Within the Emergency Response and Repair process, all networks have continued to meet customers' expectations for the third consecutive year, with the combined aggregate score for all 4 networks increasing to 9.29. Towards the latter months of the year, we have introduced a real-time feedback and recovery mechanism to help identify and rectify when we are failing to deliver a good customer service. Early indicators show this proactive feedback process to be positive, and we will be extending across other processes. Through this new mechanism; performance management; and focussed local initiatives, we are hoping to see incremental improvements across all networks moving forward.

The table below summarises the CSAT scores over the past five years.

Emergency Resp. & Repair	2013/14	2014/15	2015/16	2016/17	2017/18
EofE	9.18	9.29	9.38	9.41	9.44
Lon	8.84	8.87	9.03	9.06	9.05
North West	9.21	9.20	9.38	9.38	9.38
West Midlands	9.06	9.15	9.26	9.27	9.29

Planned works

Good progress has been made in three of the four networks within Planned Works. East of England has continued to build on the steady improvements seen from the previous year, whilst North London and North West have seen the most significant improvement in customer satisfaction performance of any gas network in the entire RIIO-GD1 period. Additional customer roles within the networks have led to a greater focus on customer performance measurement across the end-to-end process.

We are however disappointed we are still not meeting our customers' expectations in our West Midlands network, but remain committed to providing our improvements going forward. We are clear on our focus areas in this network and are ensuring we take best practise from our other networks to improve.

The table below summarises the CSAT scores over the past five years.

Planned Works	2013/14	2014/15	2015/16	2016/17	2017/18
EofE	8.17	8.03	8.07	8.24	8.46
Lon	7.90	7.91	7.96	7.82	8.25
NW	7.68	7.89	7.97	7.64	8.11
WM	7.96	7.86	7.73	7.80	7.75

Connections

East of England and North West have continued to progress on the improvements seen last year with East of England and North West networks continuing on their upward trend showing c.10% improvement across the price control period.

However, we acknowledge further work is required to see improved consistent customer satisfaction performance in North London and West Midlands. Focus remains on reducing the time taken for customers to have their work completed, and completing works on the original date communicated to the customer. To support a better consistent customer service, we have implemented the real-time feedback and recovery mechanism. Through this new mechanism, we expect customer satisfaction performance to improve.

We have also realigned the teams delivering the connections work to create much clearer accountability lines, which has helped streamline the operation and place a much more customer focused approach in driving performance.

Moving into 2018/19, as part of a Connections Transformation Programme, we will be reviewing our delivery model, identifying tactical improvements which benefit the customer, and potential redesigns to the model for RIIO-GD2.

The table below summarises the average CSAT scores over the past five years.

Connections	2013/14	2014/15	2015/16	2016/17	2017/18
EofE	7.59	7.73	8.13	8.41	8.44
Lon	6.61	6.55	6.88	7.49	7.17
NW	8.03	8.30	8.67	8.44	8.69
WM	7.52	7.95	7.83	7.69	7.85

Minimum returns (Connections only)

Each year we have a target for the minimum number of survey returns we need in order to inform how our customers perceive the level of service we provide. We have been unable to meet the target for North London despite surveying 100% of the available sample, supported by post-work completion calls to customers highlighting the importance of returning the surveys. We continue to work collaboratively with the other GDNs in readiness for RIIO-GD2, collectively looking to develop an understanding of alternative surveying methods, including electronic, with the view of removing the minimum surveys returns target and replacing with a commitment to survey 100% of the available sample in Connections.

The table below shows the overall volumes for connection survey responses in 2017/18.

Connections	East of England	North London	North West	West Midlands
No. of responses	1535	372	634	549
Min Return Target	**400**			

Complaints metric

For the reporting period we operated an effective complaints handling system ensuring that customers receive a timely and courteous service and compensation payments are made to those who are entitled to it.

This year we have tested new ways of working in one network and the results have been so positive that we've begun to roll it out across the business. The time taken to handle complaints has dropped markedly. Far less time is spent dealing with the complaint process and getting through backlogs, plus our workforce now puts greater effort into avoiding complaints in the first place. As a result of the actions we have taken, volumes have reduced by 34% relative to 2016/17 and the recent introduction of a text message feedback service should further enhance our performance. The software allows customer satisfaction to be measured in real time, with any customer registering dissatisfaction receiving a phone call within an hour to address concerns. We have also moved a lot of complaints handling to our networks, which has helped with efficiency. This has removed undue lengthy processes giving teams in the local networks the ability to resolve complaints more efficiently. Another related initiative is increasing the numbers of customer liaison officers in each of our networks, whose responsibility is to focus on how things feel to the customer, and to get to the right people in the right order when resolving issues.

The table below highlights that all of our networks have improved their complaint metric score since 2016/17 with performance well below the 11.57 RIIO-GD1 target.

2017/18 performance

Network	Received	% Unresolved by D+1	% Unresolved by D+31	Score	RIIO-GD1 Target
EofE	1983	45.39%	3.13%	5.71	11.57
Lon	2158	54.22%	6.49%	7.52	11.57
NW	1646	60.27%	5.29%	7.79	11.57
WM	1698	60.25%	4.77%	7.62	11.57

2016/17 performance

Network	Received	% Unresolved by D+1	% Unresolved by D+31	Score
EofE	2951	69.71%	6.98%	9.32
Lon	3195	77.56%	9.95%	11.03
NW	2817	71.49%	6.50%	9.39
WM	2314	73.16%	8.73%	10.20

During the year we held various continuous improvement sessions to enhance our network scores, holding various sessions to find better ways of working such as;

- Migration of complaint ownership moved into local operational departments for all networks and both GDSP Partners (TRIIO and Balfour Beatty).
- In house complaint management moved into departmental ownership
- Text message feedback service

Stakeholder engagement

2017/18 saw another step change in our stakeholder engagement activities. Our aim has been to enhance our engagement by focussing much more specifically on four network regions (a key part of our strategy as Cadent). We have held regional workshops in all four of our networks engaging with 127 stakeholders representing 85 organisations in Birmingham, London, Manchester and Norwich to understand our stakeholder priorities. The insights from these workshops were vital to deliver change now and to help shape our business plans for the future. There were 23 outputs identified with six key themes:

1. Promote who we are and the services we provide.
2. Deliver safeguarding services for customers in vulnerable situations.
3. The role our gas networks play in the whole energy system.
4. Customer outcomes and value for money in the next price control.
5. Making it easy for customers to connect to our network.
6. Minimising disruption in our networks.

Our annual consultation allows us to identify what is working well and areas where we need to improve. Sending out the consultation in August has allowed us to consider feedback and include in our business plans. In 2017 we saw the greatest number of responses to date at 239 with broad representation across our stakeholder segments.

This is the third consecutive year that our responses have risen, with stakeholder segmentation work taking place this year to ensure a further rise next year. We continue to be ambitious and having reviewed our stakeholder database recognised we wanted to increase representation further. We have carried out a segmentation exercise capturing stakeholder levels of knowledge and areas of interest. We have improved the number of stakeholders we work with and now have 1,700 stakeholders on our database compared to 643 last year, seeing a 62% increase. This will allow us to really target and tailor the content and questions we use in our next consultation.

Our independent Stakeholder Advisory Panel has continued to support us in shaping our activities and approach and we are building on this success by enhancing our engagement with consumers, which is crucial as we develop our plans for the next regulatory period. We are creating an independent Consumer Engagement Group in the summer of 2018 which will inform and challenge our plans, supported by continued engagement across our breadth of national and regional stakeholders.

As outlined in section 2 we have taken a leading role in the future role of gas contributing to the development of the UK energy market, both in the short-term as we look to RIIO-GD2, and in the longer term to support government decarbonisation targets.

We are active contributors to regional and national energy debates and policy development through various forums, and also engage with stakeholders through our Future of Gas thought leadership papers, which discuss how the gas networks can play a critical role in delivering a low cost and reliable path to decarbonisation.

Over the past three years, we have driven fundamental cross-industry change for customers in vulnerable situations to ensure a single consistent Priority Service Register (PSR) for energy customers in the UK. It has taken a gargantuan effort to achieve this but the outcome is that we have made it quicker and easier for customers to sign up to the PSR. The driving force for this change has been the cross industry Safeguarding Customer Working Group (SCWG) which we have chaired.

We have built partnerships with organisations active in our communities to share information about each other's services. These partnerships create a powerful tool to connect customers to the services they need, in or out of our industry.

By providing our front line staff with the right toolkit, we are making sure our customers receive both the services we can provide and those services other organisations are best placed to provide.

5. Social outputs

Fuel Poor connections

We play a key role in helping people to access affordable energy. Fuel Poor customers are defined by multiple criteria, including areas of multiple deprivation and high cost – low income. Fuel Poor connections can be for single domestic qualifying customers, and Community Schemes involving multiple connections to qualifying customers where a mains extension to the network.

In 2017/18 we have delivered a total of 5,430 Fuel Poor Connections across our networks. Five years into RIIO-GD1, we have made significant progress against our Fuel Poor obligations, helping some of the most vulnerable in our community gain access to more efficient forms of energy. To date across all of our networks we are currently 5% above these commitments, our East of England Network has exceeded these commitments by approximately 14%. The strategy that we implemented in 2016 for our London Network has doubled the demand for Fuel Poor connections from a baseline demand of just short of 250 connections a year to over 500 this year, and we expect this to sustain next year.

Delivery against our 8 year commitment remains a challenge in all of our Networks given Ofgem's recent changes to the Fuel Poor Network Extension Scheme qualification criteria but we are responding to this challenge to support fuel poor customers. For example, we have introduced a new model to help predict where most potential fuel poor customers are located. We will continue to innovate and look for opportunities to further improve our delivery.

Carbon Monoxide awareness

Another core element of our work to keep customers safe relates to carbon monoxide, raising awareness and intervening to minimise the risks from this colourless, odourless toxic gas that can escape from poorly maintained flues and appliances. We have achieved this through four key areas: CO education/awareness, Innovation, Influencing and Collaboration

We've chaired the CO working group where we've opened up the group to gas suppliers, gas networks of Ireland, charities, and helped shape the CO agenda in Parliament. Taking this approach we have promoted best practice sharing and learning across the industry. Some of our most important initiatives, including the APPCOG partnership, the grant scheme and the CO schools competition originated from the CO working group.

Our dedicated teams issued safety advice to 116,439 customers, warning them of the dangers and signs of carbon monoxide, and advising them of the three key steps to keep themselves and their loved ones safe. In addition to the training we give directly to individuals, we also work closely with Fire and Rescue services, councils, housing associations and universities and other groups who interact with customers. We supplied 20,575 carbon monoxide alarms to customers at elevated risk. We have continued to roll-out our Safety Seymour campaign, teaching Key Stage 1 schoolchildren about the risks of carbon monoxide through interactive drama. We ran 64 sessions in schools, an average of nearly two per week during term time reaching thousands of schoolchildren and their families. We are pleased that the other gas distribution networks have adopted the Safety Seymour scheme.

One of the key contributions to our strategy has been the development of heat maps. These have helped us to better understand where within our network we have customers who are at greater than normal risk from CO. With this improved data, we're able to target our partnerships and investment where they can make the biggest impact.

6. Environmental

Shrinkage (Leakage) % reduction

Shrinkage is gas that leaves our network without passing through a meter. While not physically measured, it is modelled and estimated using an Ofgem approved methodology. Shrinkage includes gas that leaks or is vented from our system (leakage), gas that is used for our operational purposes, for example, preheating gas prior to pressure reduction (own use gas) and gas that is stolen upstream of the meter (theft of gas).

Leakage is the largest contributing factor of greenhouse gas emissions from the gas transportation network. The leakage of natural gas therefore contributes to global warming. Shrinkage gas also contributes to customers' bills and so our continued drive to decrease the environmental impact of shrinkage also delivers customer savings.
We continue to make incremental improvements to our operating processes, for example, we are reviewing our pressure management strategy with particular focus this year on optimising benefits between customers who require appropriate gas pressure to operate their appliances and environmental emissions. We are also focusing on leakage reduction through maximising the effectiveness of our mono-ethylene-glycol (MEG) fogging equipment and the investigation of new technologies.

Monoethylene Glycol Saturation

Within each of our networks we still have a significant amount of low pressure iron mains that have lead and yarn joints. These joints are treated using MEG which reduces the rate at which gas leaks from them. A proportion of lead yarn jointed pipe is replaced annually with polyethylene pipe as part of our Mains Replacement programme. We are committed to the ongoing treatment of lead and yarn joints as this positively impacts gas Leakage and contributes to keeping our customers safe.

In 2017/18 our overall MEG saturation decreased to 30% from 31%. MEG treatment contributed a 4GWh reduction in shrinkage against the previous year. Although the saturation of MEG in the gas marginally decreased, the zone of influence, which is a measure of how far MEG travels within the distribution network increased by 6%. This results in a greater number of lead yarn jointed pipes being treated and increased reduction in shrinkage.

Current year performance

A summary of the 2017/18 Shrinkage volume performance against prior year is shown in the table below. Across our four networks shrinkage gas losses were reduced by 38GWh (3%). Based on an assumed typical annual consumption of 12,500 kWh, this reduction is equivalent to the gas usage of approximately 3,000 domestic houses. Reductions were achieved in all of our four networks with the strongest performance seen in our North London which achieved a 4.8% reduction in Shrinkage.

2017/18 PERFORMANCE	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
2016/17 SHRINKAGE OUTTURN (GWH)	**449.7**	**239.1**	**331.2**	**287.4**	**1307.4**
LP / MP MAINS REPLACEMENT	(8.8)	(6.0)	(8.0)	(5.7)	(28.6)
SERVICE RELAYS	(3.4)	(3.1)	(3.1)	(2.5)	(12.0)
AVERAGE SYSTEM PRESSURE	2.6	1.2	1.2	0.6	5.7
MONOETHYLENE GLYCOL SATURATION	(0.9)	(3.5)	(0.1)	0.5	(4.0)
INTERFERENCE DAMAGES	(0.0)	(0.2)	0.1	0.0	(0.1)
OWN USE GAS	0.1	(0.0)	0.1	0.1	0.1
THEFT OF GAS	0.1	(0.1)	0.1	0.1	0.3
AGI ASSET NUMBERS	0.4	0.2	0.1	(0.2)	0.5
2017/18 SHRINKAGE OUTTURN (GWH)	**439.9**	**227.6**	**321.5**	**280.2**	**1,269.2**
YEAR ON YEAR REDUCTION (GWH)	***(9.8)***	***(11.6)***	***(9.7)***	***(7.1)***	***(38.2)***
% REDUCTION	***(2.2%)***	***(4.8%)***	***(2.9%)***	***(2.5%)***	***(2.9%)***

Cumulative performance

For the first five years of RIIO-GD1, Shrinkage volume reductions of 243GWh (16%) against opening baselines have been achieved. On the same basis as in Section 2 above, this is the equivalent to the gas consumption of nearly 19,500 domestic houses.

Network level cumulative performance is summarised in the table below.

CUMULATIVE SHRINKAGE VOLUME REDUCTION	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
OPENING SHRINKAGE VOLUME (GWH)	517.4	272.3	394.1	328.0	1,511.8
2017/18 SHRINKAGE OUTTURN (GWH	439.9	227.6	321.5	280.2	1,269.2
CUMULATIVE REDUCTION	(77.4)	(44.7)	(72.6)	(47.8)	(242.6)
% REDUCTION	(15.0%)	(16.4%)	(18.4%)	(14.6%)	(16.0%)

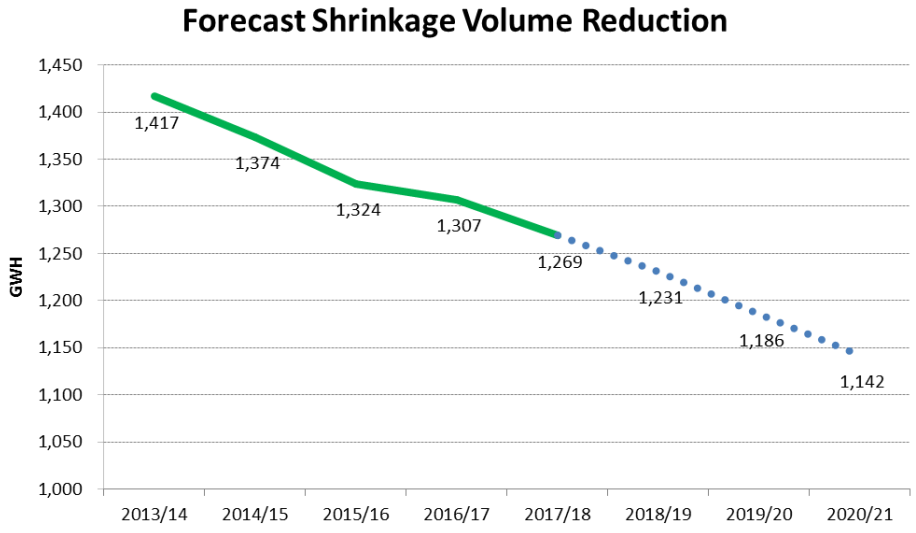
ALL FIGURES QUOTED AS PER VERSION 1.4 OF THE SHIRNKAGE & LEAKAGE MODEL

Future forecast

Our current forecast anticipates that we will deliver a further 10% aggregate reduction in Shrinkage volumes over the remainder of RIIO-GD1, and overall reductions of 24% for the eight year period. These forecast assumptions are based on latest available data for the future mains replacement programme. The forecast assumptions also assume an increase in MEG benefit as a result of our focussed MEG strategy along with year on year reductions in system pressures from those witnessed in 2017/18. The summary of the expected positions at network level are shown in the table below.

RIIO GD-1 SHRINKAGE VOLUME FORECAST

NETWORK	OPENING	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	NEXT 3 YEARS	8 YEAR TOTAL
EAST OF ENGLAND	517	478	465	449	450	440	428	411	395	(10%)	(24%)
LONDON	272	257	250	244	239	228	219	212	206	(10%)	(24%)
NORTH WEST	394	370	356	341	331	322	308	296	284	(12%)	(28%)
WEST MIDLANDS	328	313	303	290	287	280	276	267	258	(8%)	(21%)
TOTAL	**1,512**	**1,417**	**1,374**	**1,324**	**1,307**	**1,269**	**1,231**	**1,186**	**1,142**	**(10%)**	**(24%)**



Business carbon footprint

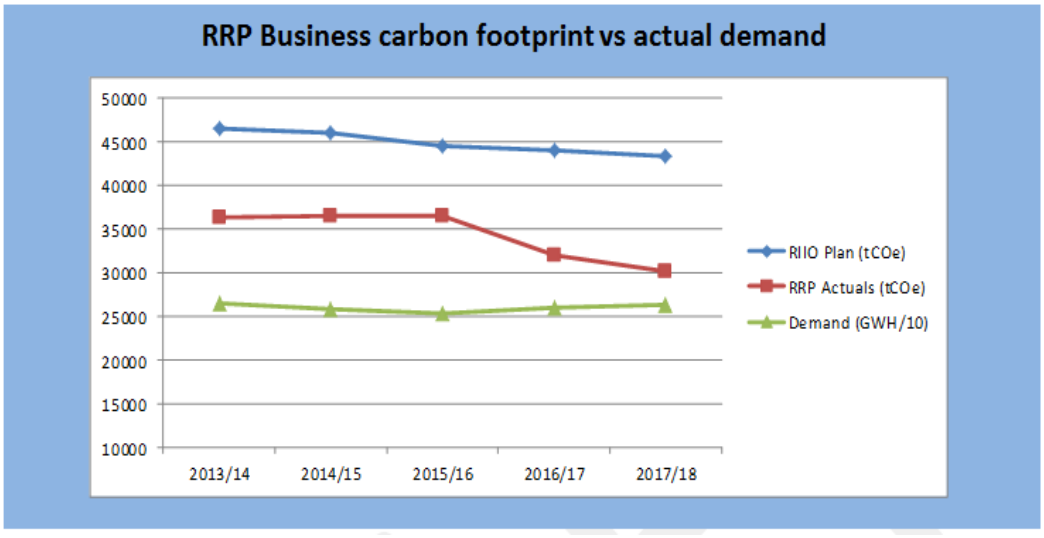
Our Business Carbon Footprint (BCF) measure encompasses a variety of factors and the following is a summary of our performance this year (excluding shrinkage).

- For 2017/18, there is a small decrease in Scope 1, 2 and 3 emissions, but overall emissions Cadent's BCF is broadly the same as for 2016/17.
- Reductions in our BCF do, however, follow a trajectory to meet or better the targets for the end of the RIIO-GD1 period.
- Scope 2 emissions: Emissions related to electricity consumption across operational and non-operational sites has decreased in 2017/18 by 4% compared to the previous year.
- Scope 3 emissions: Emissions associated with PE pipe procurement decreased 6% through the reporting year, compared to an increase in 2016/17. This decrease is likely to be reflective of a lower rate of mains replacement and less impact on emissions from the provision of large diameter pipe in 2016/17 associated with the London Medium Pressure project.
- Travel emissions: Overall travel emissions are broadly similar to the previous year. Emissions associated with all direct employee vehicle use decreased by 8% reflecting our business focus on reducing business mileage and more emissions efficient vehicles.
- This is the first full year of Cadent operating as a stand-alone organisation. Although Cadent has been through considerable continuing organisational change it has still delivered reductions in its business carbon footprint and is on track to meet or exceed the RIIO-GD1 targets.

Overall, the target performance is to reduce our aggregate Scope 1 and 2 emissions by 20% during RIIO-GD1 from a 2012/13 level of 48,691 tCO2e.

- For scope 1 emissions, we have a target of a 5% reduction in emissions over the RIIO-GD1 period.
- For scope 2 emissions, we have a target of a 27% reduction.

The graph below shows the reduction in our reported RRP emissions for the first four years of the RIIO-GD1 framework, compared against actual demand across all of our four networks. Through 2017/18 there was an increased demand of approximately 1% across our networks, but as shown we continue to make real progress in reducing our BCF as measured in tCO_2e against growing demand on our networks.



Innovation

The RIIO-GD1 framework incentivises and funds research and development and this section of the report discusses how we have used those funds and will briefly outline some of the initiatives we have been exploring.

2017/18 is the fifth year of NIA funding under RIIO-GD1. Over the five years we have invested over £36 million across 150 NIA projects with 27 being completed this year (see below for a selection of these). Our focus for this year has been on starting projects which offer targeted solution to common challenges, and which can be delivered quickly into our business to improve the way we work and deliver benefits for our customers. This is alongside long range, deliverable projects in our future of gas portfolio. We currently have a portfolio of 61 projects, 22 of which have been carried out collaboratively with the Gas Network Operators which are beneficial to customers by spreading the cost where benefits are realised by everybody.

In 2017/18 our Innovation NIA expenditure was split across our six strategic value areas as shown below along with how these translate into outputs and performance.

Cost Efficiency – 31% to support Totex performance
Customer Experience – 16% to help drive improving Customer outputs and performance
Environment – 16% linked to support a low carbon future
Future Network – 26% linked to support a low carbon future
Life Extension – 8% to support Totex performance
Other – 2%

Highlights of where we have focused on innovation this year are outlined below:

Future role of gas

Meeting the UK's 80% carbon emission reduction target for 2050 will require domestic emissions to be reduced by at least 3% per year. Our position is clear; gas has a critical role to play in the future energy mix and to support this we have made sustained progress with the following projects:

HyDeploy

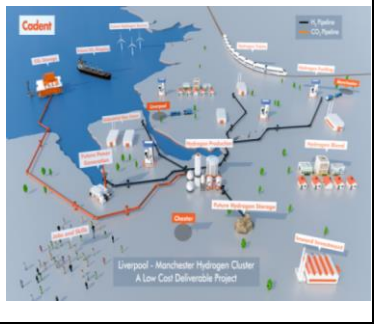
HyDeploy will provide evidence of the level of hydrogen which can be used safely in the gas network without making any disruptive changes to customers' appliances. Hydrogen does not produce any CO2 when it burns – just steam and heat – and its widespread use blended with natural gas has the potential to reduce carbon emissions by as much as 6m tonnes a year, equivalent to over 1 million passenger vehicle miles.

The results of HyDeploy will provide a platform for a trial on a public network and wider roll out.

HyNet

This project provides a practical and economic framework to introduce hydrogen into the gas network in the Liverpool-Manchester area covered by our North West network, which has the highest number of major industrial gas users out of our four networks. The proposal is to convert natural gas into clean-burning hydrogen which would then be supplied to a core set of major industrial users and fed into the local gas distribution network as a blend with natural gas.

This project has become a core potential option for future of gas networks and has significant BEIS and wider political interest.



Future Billing Methodology Project Explores options to find a more specific way of attributing the energy content of gas (calorific value or CV) to volumes in GB's gas distribution networks for billing purposes. The primary driver for this project is to identify a robust, cost-effective option to support the decarbonisation of heat to help meet the UK's 2050 emissions target. The aim is to achieve this using the existing gas distribution networks to transport renewable and other low carbon gases without the need for enrichment with fossil-based gases to standardise its energy content (calorific value or CV) for billing purposes. Future Billing Methodology	**Commercial BioSNG plant** The Swindon Commercial Demonstration plant, which is due to deliver renewable gas into the local gas network, has the capacity to convert 10,000 tonnes of waste per year into grid quality gas, enough to heat 1,500 homes or power 75 HGVs as well as reducing emissions of harmful greenhouse gases. .

Other Innovation Highlights 2017/18

Minimising disruption - focusing our efforts on improving the way we work

Optimole – is a portable device that works by inserting a fibre optic gas sensor into ducts when locating gas leaks. Benefits include: • Reduction in the number of excavations, minimising public disruption and reducing reinstatement costs • Improved gas leak identification, which has a positive impact on integrity, safety and reliability of the network • Leaks found faster leading to increased work output and reduced methane emissions • Safer for the workforce and public due to reduced gas emissions and combustion risk *Currently being implemented*	**Servi-Boost**™ ensures customer supply remains uninterrupted pending a planned service relay. The solution lifts pressure at the customer supply point using a battery powered compressor and has a number of customer benefits. • Gas supply restored on first visit • Reduces reactive service relay work and inconvenience to public and customers • Reduces expensive weekend and out of hours work Development testing has been successful for ten units and proved the system viability of Serviboost™ *Field trials for units are now planned for North London this winter and where successful implementation will start across Cadent early 2019.*	**NuFlow epoxy lining** technology provides an option for pipe refurbishment in situ, as an alternative to full pipe replacement in multi-occupancy buildings. It uses patented technologies for a simple but effective forced air lining process that applies a resin coat to the inside of the pipe to prevent corrosion and leakage, and to preserve the life of the existing pipe system. Benefits include: • Less time on site, less time 'off gas' for customers, faster and less intrusive • An alternative option to replacement where constraints exist • Reduced need for excavations, welding, physical riser replacement in turn saving time and costs and for scaffolding/access equipment. *Field trials have provided valuable learning and identified some additional challenges which are in the work plan to address before a decision can be taken to implement further.*

Improving mains replacement

Bonded Saddle

The Bonded Saddle is a device which gives quicker and easier for temporary access to large diameter (>18”) pipes for mains replacement works.

Benefits

The use of bonded saddle technology avoids the usual requirement to fully expose the circumference of the host main in replacement works. This brings several benefits.

- Less large excavation works reducing cost and disruption.
- Uses off-the-shelf connections fittings, so no additional specialist fittings need to be developed.
- When the saddle is in place, operatives can drill, tap and install new fittings, and remove existing fittings.
- Longer-term potential to expand the use of the saddle technology in smaller diameter pipe connections.

Mechanical Purge End Fitting

Mechanical Purge End is a new reusable end fitting. It can be used during the laying of polyethylene gas mains as both test end caps and purge points for the new section of pipe.

Benefits

- The fittings developed are suitable for use on PE mains within the diameter range 75-125mm; and for operation at both low and medium pressure.
- Re-usability will save costs through reduction of electrofusion fittings and associated tooling.
- The fitting concept should enhance *productivity negating the need for installation, fusion & cooling waiting times.*
- Reduction in material sent for recycling.

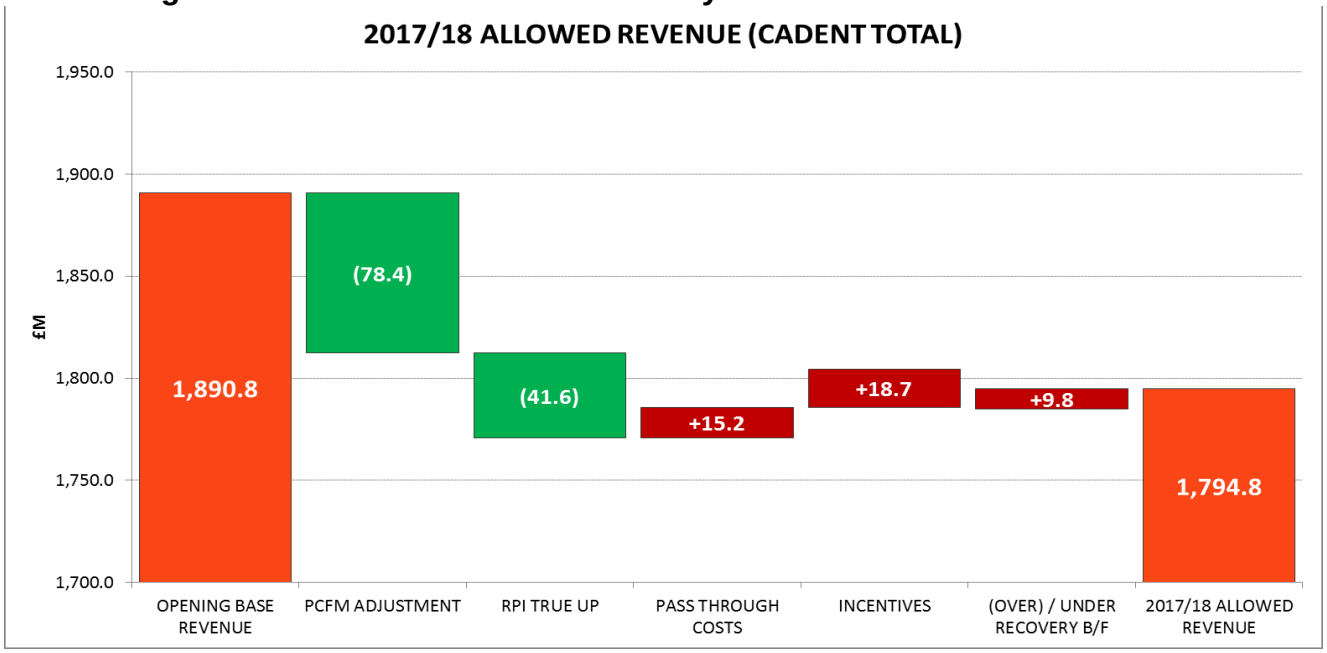
Field trials are planned for 2018/19.

Financial Performance

Transportation Revenue - Allowed Revenue

Final 2017/18 Allowed Revenue for Cadent's networks was £1,794.8m. A high level summary is shown in the chart below:

2017/18 High Level Allowed Revenue Summary



The table below shows the composition of Allowed Revenue for each network in more detail.

ALLOWED REVENUE SUMMARY (2017/18 PRICES)	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
OPENING BASE REVENUE	634.2	449.9	461.5	345.2	1,890.8
ANNUAL ITERATION ADJUSTMENT	(15.6)	(26.3)	(19.6)	(16.9)	(78.4)
RPI TRUE UP	(13.9)	(10.2)	(10.0)	(7.5)	(41.6)
2017/18 BASE REVENUE	**604.6**	**413.4**	**431.9**	**320.7**	**1,770.7**
PASS THROUGH COSTS	5.9	2.7	3.7	2.9	15.2
EXIT CAPACITY (PASS THROUGH ADJ)	(7.6)	(2.0)	0.1	(1.1)	(10.6)
EXIT CAPACITY (INCENTIVE REVENUE)	13.3	6.1	5.9	2.8	28.1
SHRINKAGE (PASS THROUGH ADJ)	(8.0)	(3.7)	(6.3)	(5.0)	(23.0)
SHRINKAGE (INCENTIVE REVENUE)	0.6	0.3	0.3	0.3	1.4
ENVIRONMENTAL EMISSIONS INCENTIVE	3.1	1.7	1.6	1.8	8.2
BROAD MEASURE OF CUSTOMER SATISFACTION	3.1	1.1	2.7	1.0	7.9
DISCRETIONARY REWARD SCHEME	-	-	-	-	-
NETWORK INNOVATION ALLOWANCE	2.4	1.4	1.6	1.2	6.6
(OVER) / UNDER RECOVERY BROUGHT FORWARDS	0.1	(3.4)	(7.5)	1.0	(9.8)
2017/18 ALLOWED REVENUE	**617.7**	**417.5**	**434.0**	**325.6**	**1,794.8**

Opening Base Revenue reflects the RIIO-GD1 Final Proposals starting position, as embedded in the Gas Transporter Licence.

The Annual Iteration Adjustment represents updates to opening base revenue, primarily composed of the impact of Cost of Debt indexation, Tax Trigger adjustments, Totex incentive performance and adjustment to cost allowances in respect of Uncertainty Mechanisms. The Annual Iteration Adjustment is covered in more detail later.

The RPI True Up is the two-year lagged revenue adjustment arising from the variance between forecast inflation (RPIFt) and actual inflation (RPIAt) for 2015/16. The provisional inflation assumption, underpinned by HM Treasury forecasts was 1.79%. However actual average inflation for the formula year landed at 1.08%, resulting in the downward adjustment to revenue observed in 2017/18.

The Pass Through cost adjustment of £15.2m is mainly driven by increases to actual business rates (£6.5m) and NTS pension deficit payments (£10m) in 2015/16 relative to associated cost allowances. These were partly offset by the £1.4m of net gas theft recoveries we achieved in 2017/18.

Exit Capacity and Shrinkage revenue adjustment arrangements carry both a cost pass through element and an incentive element, which are separately identified in the table above for clarity.

For the Exit Capacity pass through element, this represents the two-year lagged decrease in 2015/16 actual payments relative to associated cost allowances. We estimate that the £10.6m reduction is broadly comprised of around £7m increase in NTS exit capacity prices, offset by roughly £17m in reduced capacity bookings.

For the Shrinkage pass through element, we estimate that the two-year lagged £23m revenue reduction is broadly comprised of around £20m in gas price movements, and £3m in Shrinkage volume reductions relative to original baseline assumptions. Noting the significant reduction in gas prices observed since the RIIO-GD1 Final Proposal, we applied to Ofgem for a downward revision to associated pass through allowance to set them at a level more appropriate given current conditions. This is beneficial to customers as it brings the impact of cost reductions into current levels of revenue rather than subjecting them to a 2 year lagged adjustment. The impact of the reduction to Shrinkage cost allowances can be observed in the Annual Iteration Adjustment section later. Cadent were the only Gas Distribution Network company to request this reduction.

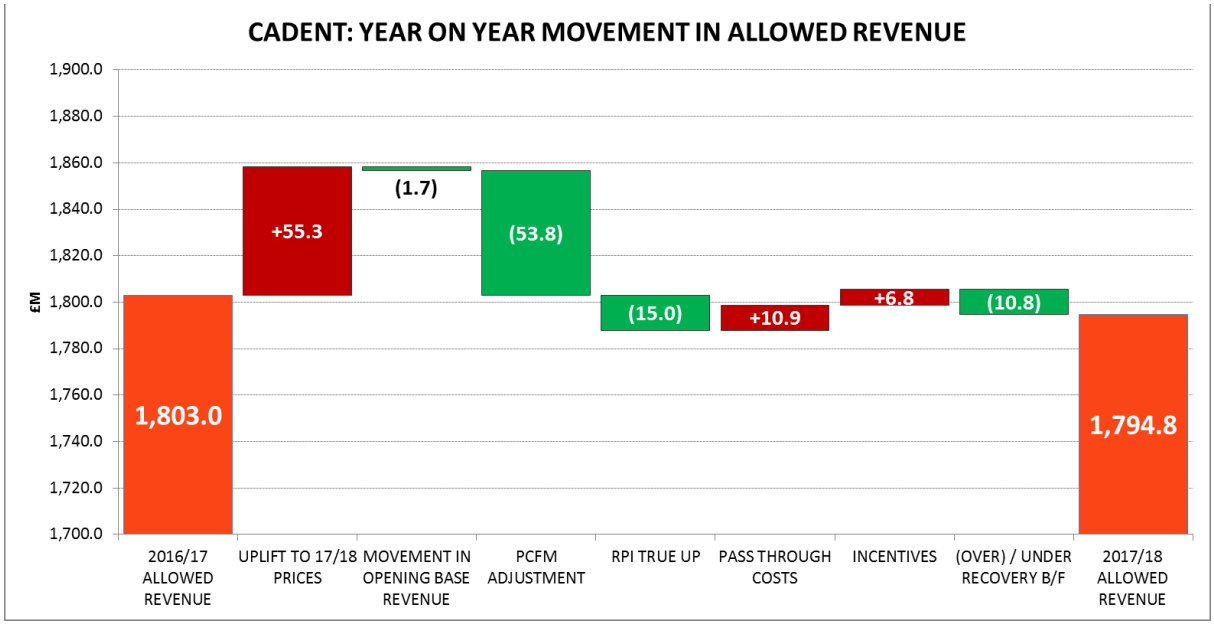
For the output incentive revenue adjustments (Exit Capacity, Shrinkage, Environmental Emissions and Broad Measure of Customer Satisfaction), these represent the two-year lagged incentive performance achieved in 2015/16. A section dedicated to cumulative actual and future forecast incentive performance is included later in this report.

Unlike the vast majority of revenue adjustments, the Network Innovation Allowance adjustment is not two-year lagged, and represents expenditure levels incurred in the year. In 2017/18 we spent £7.3m on innovation projects, which was 59% of the spend cap. Networks are allowed to recover 90% of eligible spend (subject to maintenance of a 75/25 external/internal cost ratio), resulting in the £6.6m adjustment shown in the table above.

2017/18 Allowed Revenue also included the lagged repayment of the 0.5% over recovery of transportation revenue in 2015/16, inclusive of interest adjustments.

Year on Year Movement in Allowed Revenue

2017/18 Allowed Revenue was £8.2m (0.5%) lower than 2016/17. A high level summary is shown in the chart below:



The year on year movement is shown by network in more detail in the table below:

MOVEMENT IN ALLOWED REVENUE	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
2016/17 ALLOWED REVENUE	**596.6**	**432.2**	**452.9**	**321.3**	**1,803.0**
UPLIFT TO 17/18 PRICES	18.3	13.3	13.8	9.9	55.3
MOVEMENT IN OPENING BASE REVENUE (PUt)	(1.5)	(6.2)	2.2	3.9	(1.7)
PCFM ADJUSTMENT (MODt)	1.7	(20.6)	(24.8)	(10.0)	(53.8)
RPI TRUE UP	(4.9)	(4.0)	(3.5)	(2.6)	(15.0)
PASS THROUGH COSTS	4.0	2.0	2.8	2.1	10.9
EXIT CAPACITY	3.6	3.1	1.9	0.2	8.8
SHRINKAGE	(2.0)	(1.0)	(1.5)	(1.3)	(5.8)
ENVIRONMENTAL EMISSIONS INCENTIVE	0.3	(0.1)	0.4	0.6	1.1
BROAD MEASURE OF CUSTOMER SATISFACTION	1.4	1.0	0.8	0.1	3.4
DISCRETIONARY REWARD SCHEME	(0.2)	(0.1)	(0.1)	(0.1)	(0.5)
NETWORK INNOVATION ALLOWANCE	(0.1)	(0.1)	(0.1)	(0.0)	(0.2)
(OVER) / UNDER RECOVERY BROUGHT FORWARDS	0.4	(2.1)	(10.8)	1.7	(10.8)
2017/18 ALLOWED REVENUE	**617.7**	**417.5**	**434.0**	**325.6**	**1,794.8**
% CHANGE IN ALLOWED REVENUE	***3.5%***	***(3.4%)***	***(4.2%)***	***1.3%***	***(0.5%)***

Annual Iteration Adjustment

The reduction to Base Revenue arising from the November 2016 Annual Iteration Process was £78.4m in 2017/18 prices. More than half of this reduction was driven by cost of debt indexation, with the allowed percentage of the year determined at 2.22%, relative to the opening position of 2.92% in the RIIO-GD1 Final Proposals, demonstrating again how this mechanism has driven tangible savings for customers.

Around 70% of the £28m reduction arising from the Totex Incentive Mechanism relates to replacement expenditure efficiencies. 32% relates to reductions in net capex spend, with remaining balance attributable to controllable opex increases.

The Annual Iteration Adjustment includes £12m of the Shrinkage cost allowance reduction referred to previously, representing around 15% of the total.

The RIIO-GD1 Price Control Financial Model includes detailed tax calculations, which adjust annually for material changes. Around 12% of the Annual Iteration Adjustment total relates to reduction in Corporation Tax rates relative to the opening assumption included in the Final Proposals, the actual Corporation Tax rate for the year being 19%, versus the 21% originally assumed.

The November 2016 Annual Iteration Adjustment included the effect of agreed adjustment to allowances for items subject to Uncertainty Mechanisms namely, Enhanced Site Security, Fuel Poor Network Connections, Specified Streetworks, Tier 2A Replacement Expenditure, and revisions to Xoserve costs following the Funding, Governance and Ownership review (FGO).

The remaining balance of (£5.7m) relates to downward legacy adjustments, and reductions to pension deficit funding.

The table below summarises the total adjustment by category of movement for 2017/18

PCFM ADJUSTMENT (2017/18 PRICES)	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
COST OF DEBT INDEXATION	(14.2)	(10.0)	(9.9)	(7.5)	(41.6)
TOTEX INCENTIVE MECHANISM	(5.2)	(16.8)	(3.1)	(3.0)	(28.1)
SHRINKAGE ALLOWANCE REVISION	(4.4)	(1.9)	(3.4)	(2.2)	(12.0)
TAX TRIGGER ADJUSTMENTS	(3.1)	(2.5)	(2.1)	(1.8)	(9.4)
REDUCTION TO XOSERVE COSTS	(2.0)	(1.1)	(1.4)	(1.2)	(5.6)
ENHANCED SITE SECURITY UNCERTAINTY ADJ	14.3	8.2	1.9	-	24.4
FUEL POOR NETWORK CONNECTION UNCERTAINTY ADJ	0.5	-	1.0	0.9	2.4
SPECIFIED STREETWORKS UNCERTAINTY ADJ	-	0.6	0.5	-	1.1
TIER 2A REPEX UNCERTAINTY ADJ	(0.4)	(1.3)	(1.3)	(1.0)	(3.9)
OTHER PCFM ADJUSTMENTS	(1.3)	(1.5)	(1.7)	(1.1)	(5.7)
TOTAL PCFM ADJUSTMENT	**(15.6)**	**(26.3)**	**(19.6)**	**(16.9)**	**(78.4)**

Revenue Collection

Revenue collection was marginally above the Allowed Revenue level at £5.7m (0.3%) and is summarised by network in the table below:

REVENUE COLLECTION	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
2017/18 ALLOWED REVENUE	617.7	417.5	434.0	325.6	1,794.8
2017/18 COLLECTED REVENUE	619.5	418.8	434.6	327.6	1,800.5
UNDER / (OVER) RECOVERY OF REVENUE	(1.8)	(1.3)	(0.6)	(2.0)	(5.7)
% UNDER / (OVER) RECOVERY OF REVENUE	(0.3%)	(0.3%)	(0.1%)	(0.6%)	(0.3%)

The majority of the over collection was observed in the Commodity Revenue class, driven by the very cold weather experienced in the final quarter of the year. 2017/18 saw the implementation of Project Nexus which has helped to create greater stability and predictability in revenue collection, and minimising downstream volatility to future allowed revenue determinations. We are again seeing this stability in 2018/19, and anticipate that any revenue collection variability going forwards will be limited to weather sensitivity, and to a lesser extent, from in year expansions and contractions in the chargeable base.

The table below shows 2017/18 revenue collection by recovery mechanism.

REVENUE COLLECTION BY DRIVER	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
COMMODITY DRIVEN REVENUE	21.9	14.2	15.4	11.9	63.4
% UNDER / (OVER) RECOVERY BY CATEGORY	(4.4%)	(4.7%)	(5.8%)	(5.6%)	(5.0%)
CONTRIBUTION TO OVERALL (OVER) / UNDER RECOVERY	(0.2%)	(0.2%)	(0.2%)	(0.2%)	(0.2%)
CAPACITY DRIVEN REVENUE	597.6	404.6	419.2	315.7	1,737.1
% UNDER / (OVER) RECOVERY BY CATEGORY	(0.1%)	(0.2%)	0.1%	(0.4%)	(0.2%)
CONTRIBUTION TO OVERALL (OVER) / UNDER RECOVERY	(0.1%)	(0.2%)	0.1%	(0.4%)	(0.1%)

Allowed Revenue Forecast

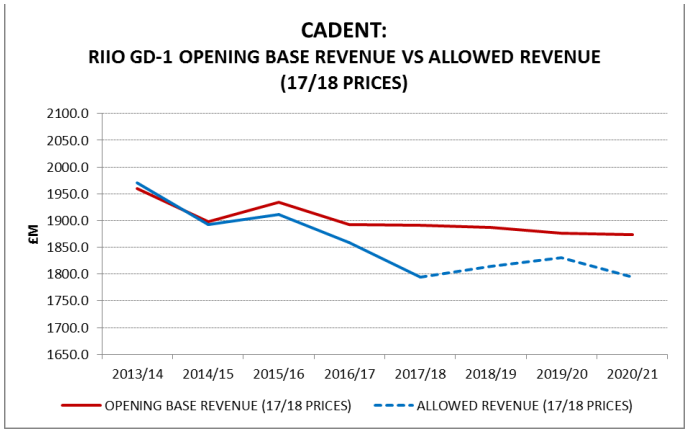
We anticipate continued reduction in Allowed Revenue forecasts in real terms across the remainder of RIIO-GD1, with closing revenue currently forecast to be nearly 9% lower than opening positions.

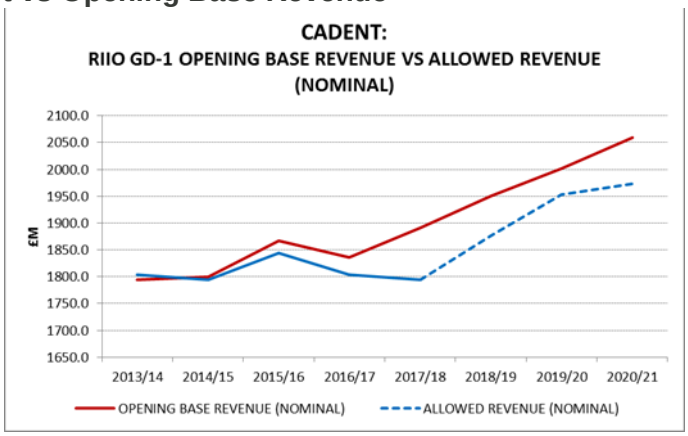
Relative to the RIIO-GD1 Final Proposals, we expect total allowed revenue for the price control period to be around £345m lower in 2017/18 prices. The table and charts below summarise our current allowed revenue projections for RIIO-GD1.

Allowed Revenue Forecast vs Opening Base Revenue

CADENT REVENUE FORECAST	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	TOTAL
OPENING BASE REVENUE (17/18 PRICES)	1,960	1,899	1,934	1,892	1,891	1,887	1,876	1,873	1,746
ALLOWED REVENUE (17/18 PRICES)	1,971	1,892	1,911	1,859	1,795	1,815	1,830	1,795	1,814
VARIANCE	11	(6)	(24)	(34)	(96)	(72)	(46)	(79)	(345)
OPENING BASE REVENUE (NOMINAL)	1,794	1,800	1,867	1,836	1,891	1,951	2,001	2,059	15,198
ALLOWED REVENUE (NOMINAL)	1,803	1,794	1,844	1,803	1,795	1,876	1,952	1,973	14,841
VARIANCE	10	(6)	(23)	(33)	(96)	(74)	(49)	(87)	(357)

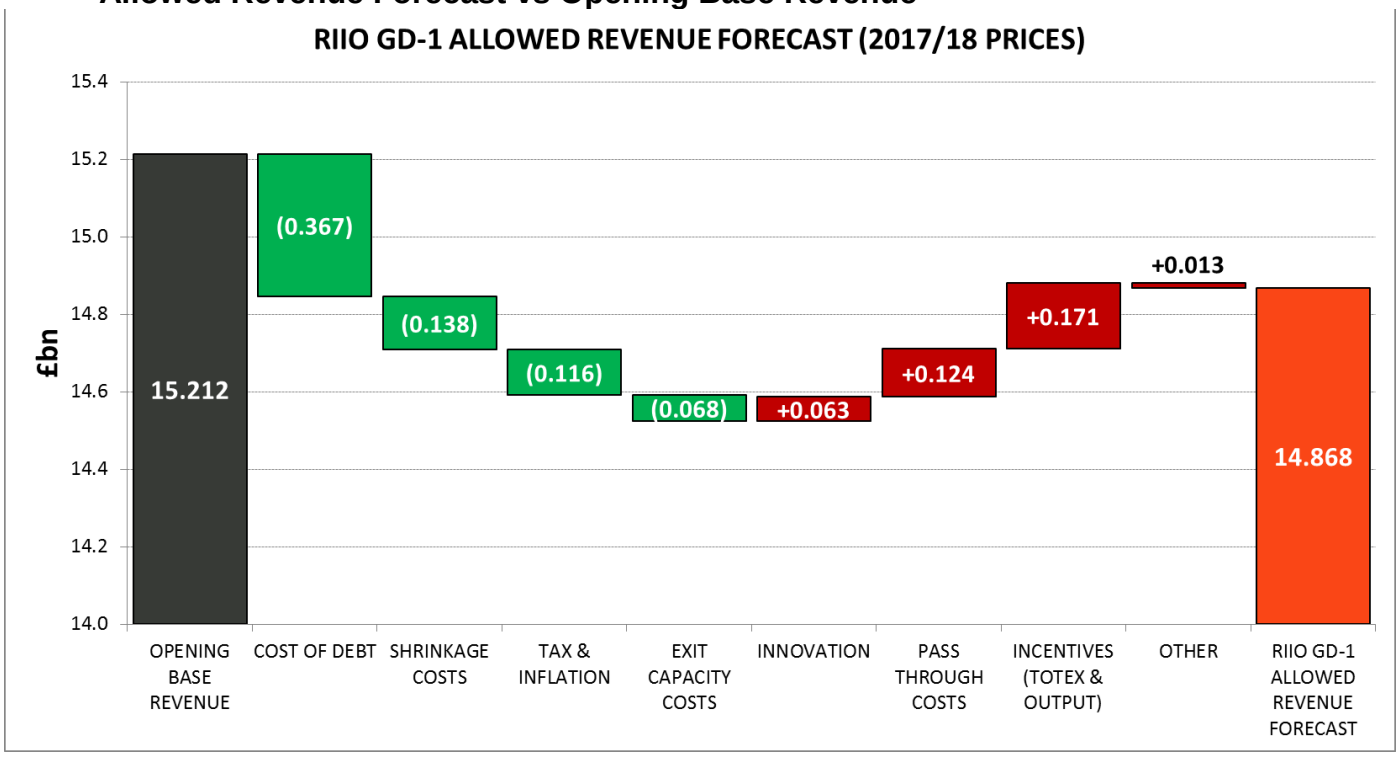
Allowed Revenue Forecast vs Opening Base Revenue





The main drivers of the reduction are summarised in the chart below.

Allowed Revenue Forecast vs Opening Base Revenue



Output Incentives

Exit Capacity

Our primary consideration when assessing our capacity booking strategy is to ensure that we meet our 1 in 20 reliability obligation. Incentive performance is driven by our ability to meet this obligation, at the same time reducing our capacity bookings in absolute terms relative to the RIIO-GD1 volume targets by closely monitoring background demand conditions, and by maximising bookings at the cheapest offtakes wherever possible. We minimise our reliance on NTS capacity by utilising the intrinsic flexibility of our networks, with our facilitation of new biomethane connections also assisting in this regard to a small extent. This benefits consumers by avoiding exit capacity costs that would otherwise be charged by National Grid.

The resilience of our strategy was proven in 2017/18 with our networks standing up well to the adverse weather conditions experienced in the final quarter, utilising daily NTS products to supplement our annual bookings at a cost of less than £70k against an annual cost of £106m. We anticipate being able to hold our bookings positions to a broadly similar level for the remainder of RIIO-GD1, resulting in the upward incentive performance trajectory shown in the table below.

Exit Capacity Incentive Performance Summary

EXIT CAPACITY	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	(21.1%)	(1.0%)	8.6	+0.80%	(17.9%)	37.5	+0.69%	(18.5%)	58.5	+0.67%	▲
LONDON	(17.2%)	-	4.0	+0.53%	(13.1%)	16.8	+0.46%	(14.6%)	26.0	+0.43%	▲
NORTH WEST	(13.0%)	(2.1%)	5.2	+0.68%	(8.8%)	17.5	+0.46%	(10.4%)	30.0	+0.49%	▲
WEST MIDLANDS	(8.5%)	(0.1%)	2.0	+0.35%	(7.2%)	8.8	+0.31%	(7.7%)	13.8	+0.30%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Shrinkage

The focus of the Shrinkage Incentive is on cost reduction, given that shrinkage costs are passed through to customers via transportation charges. Across our four networks, year on year shrinkage gas losses were reduced by 38GWh (3%), the majority of this coming from the impact of mains and service replacements above the positions factored into baseline targets. Based on an assumed typical annual consumption of 12,500 kWh, this reduction is equivalent to the gas usage of approximately 3,000 domestic houses. Reductions were achieved in all of our four networks as shown in the table below. The strongest performance was seen in the North London network which achieved a 4.8% reduction in shrinkage. The lowest performing network was East of England with a 2.2% decrease in overall shrinkage.

Average system pressures were slightly higher than 2016/17, resulting in an increase to underlying shrinkage of around 5.7 Gwh (0.5%) across the four networks. We are continuing work to enhance the capabilities of our pressure management systems, however there is a limit to which such improvements can be made because customers must receive gas at an appropriate pressure to operate their appliances. Increases in demand will influence operating pressures with impact to our automated control systems which raise pressures to achieve required flow rates. Additionally, we continue to use mains insertion techniques as our replacement technique of choice as this minimises disruption to customers, but does require elevated pressures due to capacity loss.

For the first five years of RIIO-GD1, shrinkage volume reductions of 243GWh (16%) against opening baselines have been achieved. On the same basis as above, this is the equivalent to the gas consumption of nearly 19,500 domestic houses.

Our current forecast anticipates that we will deliver a further 10% aggregate reduction in Shrinkage volumes over the remainder of RIIO-GD1, and overall reductions of 24% for the eight year period. These forecast assumptions are based on latest available data for the future mains replacement programme. We also anticipate that our focussed MEG strategy will drive further improvements to monoethylene glycol saturation, along with year on year system pressure management improvements from the levels observed in 2017/18.

Shrinkage Incentive Performance Summary

SHRINKAGE	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	(8.2%)	0.1%	0.4	+0.03%	(15.0%)	3.0	+0.04%	(23.7%)	5.1	+0.05%	▲
LONDON	(12.1%)	(2.0%)	0.4	+0.04%	(16.4%)	2.1	+0.05%	(24.4%)	3.5	+0.05%	▲
NORTH WEST	(7.1%)	(0.1%)	0.3	+0.03%	(18.4%)	1.6	+0.03%	(28.0%)	3.1	+0.04%	▲
WEST MIDLANDS	(7.2%)	0.1%	0.3	+0.04%	(14.6%)	1.4	+0.04%	(21.3%)	2.4	+0.04%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Environmental Emissions

The Environmental Emissions Incentive rewards networks for reductions in the carbon impact of fugitive emissions against a baseline target. The underlying data to derive incentive performance is same as used for the Shrinkage incentive (the difference being that Shrinkage includes the assumed impact of own use gas, and theft of gas), therefore the drivers of incentive performance are largely the same, although the underlying rationale of the incentive mechanism is on environmental impact rather than cost reduction.

Across our four networks, leakage losses were reduced by 39GWh (3%) in the year against 2016/17. This was 9% better than RIIO-GD1 baseline targets for the year. Cumulative, we have achieved leakage reductions of 16%, and forecast that this will increase to 25% by the end of the price control period.

Environmental Emissions Incentive Performance Summary

ENVIRONMENTAL EMISSIONS	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	(8.5%)	0.0%	2.1	+0.16%	(15.1%)	13.7	+0.20%	(24.5%)	25.6	+0.24%	▲
LONDON	(12.6%)	(2.1%)	2.2	+0.23%	(16.5%)	9.5	+0.21%	(25.2%)	17.2	+0.23%	▲
NORTH WEST	(7.2%)	0.1%	1.5	+0.16%	(18.7%)	7.6	+0.16%	(28.9%)	15.8	+0.21%	▲
WEST MIDLANDS	(8.0%)	(0.3%)	1.6	+0.22%	(14.7%)	7.4	+0.21%	(21.7%)	12.7	+0.22%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Customer Satisfaction: Planned Work

Performance in the year reflects our continuing journey in this area of Customer Satisfaction with three out of four networks both exceeding target levels, and showing strong year on year improvement, particularly in the London and North West networks. The RIIO-GD1 to date position below is based on average scores achieved, with associated incentive revenue/penalty. Through our focussed Customer improvement strategy, our ambition is for all networks to be achieving well above target levels by the end of the price control.

Customer Satisfaction (Planned Work) Incentive Performance Summary

CSAT: PLANNED WORK	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	+0.37	+0.22	0.9	+0.07%	+0.10	1.4	+0.02%	+0.91	4.5	+0.04%	▲
LONDON	+0.16	+0.43	0.3	+0.03%	(0.12)	(0.7)	(0.02%)	+0.91	1.4	+0.02%	▲
NORTH WEST	+0.02	+0.47	0.0	+0.00%	(0.23)	(1.6)	(0.03%)	+0.81	0.6	+0.01%	▲
WEST MIDLANDS	(0.34)	(0.05)	(0.3)	(0.04%)	(0.27)	(1.3)	(0.04%)	+0.41	0.3	+0.01%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Customer Satisfaction: Unplanned work

We have achieved another year of strong performance in the Unplanned Work category, with prior year performance broadly maintained, and Customer expectations exceeded for the third consecutive year. Our forecast reflects our ambition to continue to drive year on year performance through to the end of RIIO-GD1. Towards the end of 2017/18, we introduced a real-time feedback and recovery mechanism to help identify and rectify when we are failing to deliver a good Customer experience. Early indications show this proactive feedback process to be beneficial, and we will be extending across other processes. Through this new mechanism, performance management, and focussed local initiatives, we are hoping to see incremental improvements across all networks moving forwards.

Customer Satisfaction (unplanned work) Incentive Performance Summary

CSAT: UNPLANNED WORK	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	+0.63	+0.03	1.0	+0.08%	+0.53	5.4	+0.08%	+0.79	8.5	+0.08%	▲
LONDON	+0.24	(0.01)	0.7	+0.08%	+0.16	2.7	+0.06%	+0.64	4.8	+0.06%	▲
NORTH WEST	+0.57	-	0.7	+0.08%	+0.50	3.9	+0.08%	+0.79	6.1	+0.08%	▲
WEST MIDLANDS	+0.48	+0.02	0.5	+0.08%	+0.40	2.9	+0.08%	+0.79	4.6	+0.08%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Customer Satisfaction: Connections

Whilst we have achieved year on year improvements in three networks, we acknowledge that further work is required to see improved consistent Customer Satisfaction performance in the London and West Midlands networks.

Our focus remains on reducing the time taken for Customer's work to complete, and completing works to the original date communicated to the Customer. To support a better consistent Customer service, we have implemented a real-time feedback and recovery mechanism. Through this new mechanism, we expect Customer satisfaction performance to improve.

We have also realigned the teams delivering the connections work to create much clearer accountability lines, which has helped streamline the operation, and place a much more Customer focused approach in driving performance.

Moving into 2018/19, as part of a Connections Transformation Programme, we will be reviewing our delivery model, identifying tactical improvements which benefit the customer, and potential redesigns to the model for RIIO-GD2.

Customer Satisfaction (Connections) Incentive Performance Summary

CSAT: CONNECTIONS	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	+0.40	+0.03	1.0	+0.08%	+0.02	1.2	+0.02%	+1.06	4.3	+0.04%	▲
LONDON	(0.87)	(0.32)	(0.7)	(0.08%)	(1.10)	(3.6)	(0.08%)	+0.46	(2.1)	(0.03%)	▲
NORTH WEST	+0.65	+0.25	0.7	+0.08%	+0.39	2.9	+0.06%	+1.11	5.1	+0.07%	▲
WEST MIDLANDS	(0.19)	+0.16	(0.1)	(0.02%)	(0.27)	(1.1)	(0.03%)	+0.46	0.6	+0.01%	▲

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Complaints Handling

We are pleased to report another year of outperformance against targeted levels, with performance improvements made in all four networks.

Complaints Handling

COMPLAINTS	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	PERFORMANCE VS TARGET	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	PERFORMANCE VS TARGET	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	(5.86)	(3.61)	-	-	(2.61)	-	-	(5.86)	-	-	▶
LONDON	(4.05)	(3.51)	-	-	(1.16)	-	-	(4.05)	-	-	▶
NORTH WEST	(3.78)	(1.60)	-	-	(2.11)	-	-	(3.78)	-	-	▶
WEST MIDLANDS	(3.95)	(2.58)	-	-	(1.99)	-	-	(3.95)	-	-	▶

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Stakeholder Engagement

In July 2018, we were awarded a score of 6.0 by the Stakeholder Engagement panel for our 2017/18 submission. Given the feedback received by all networks, an eight year forecast position is difficult to predict. The assumption in the table below reflects achievement of average scores to date in the period 2018/19 to 2020/21.

Stakeholder Engagement

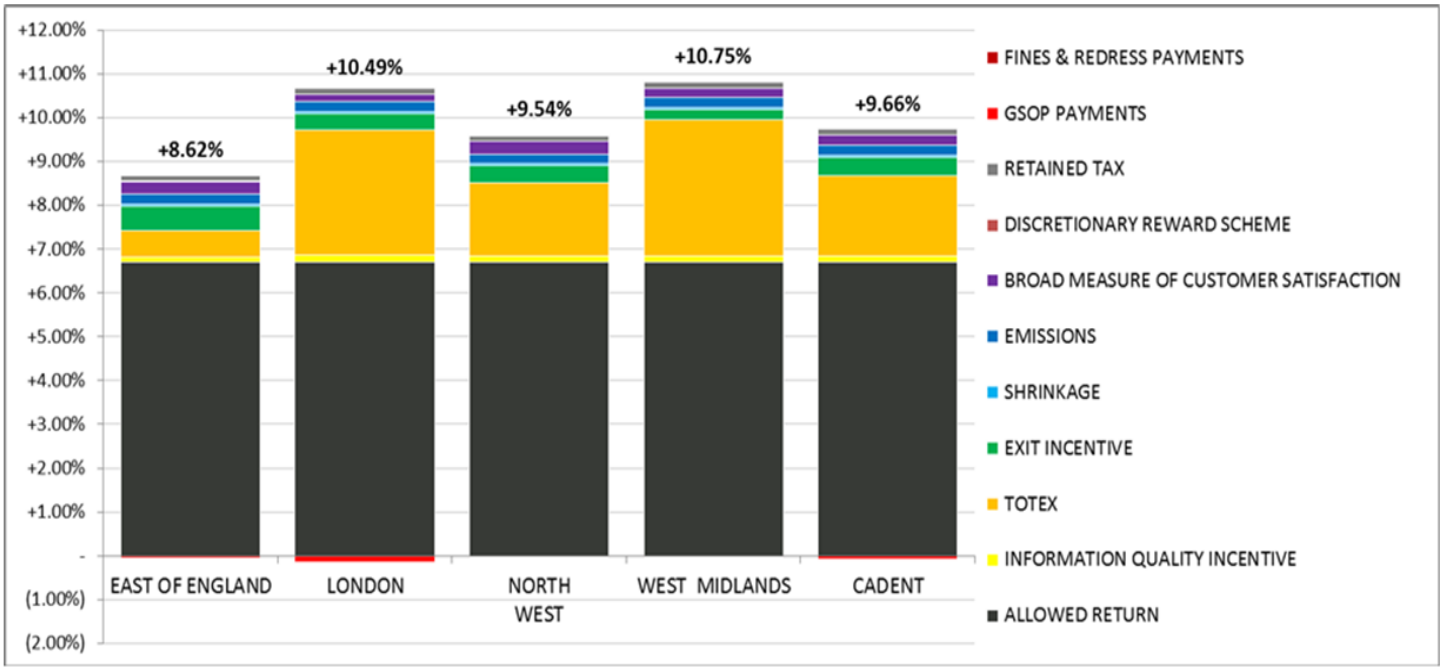
STAKEHOLDER ENGAGEMENT	CURRENT YEAR				RIIO GD-1 TO DATE			8 YEAR FORECAST			
NETWORK	SCORE	CHANGE TO PRIOR YEAR	INCENTIVE REVENUE (£M)	RORE IMPACT	AVERAGE SCORE	INCENTIVE REVENUE (£M)	RORE IMPACT	FORECAST CLOSING SCORE	INCENTIVE REVENUE (£M)	RORE IMPACT	DIRECTION OF TRAVEL
EAST OF ENGLAND	6.00	(0.90)	1.2	+0.09%	6.57	7.9	+0.12%	6.60	12.6	+0.12%	▶
LONDON	6.00	(0.90)	0.8	+0.09%	6.57	5.5	+0.12%	6.60	8.7	+0.12%	▶
NORTH WEST	6.00	(0.90)	0.9	+0.09%	6.57	5.7	+0.12%	6.60	9.1	+0.12%	▶
WEST MIDLANDS	6.00	(0.90)	0.6	+0.09%	6.57	4.2	+0.12%	6.60	6.8	+0.12%	▶

Incentive revenue expressed in 2017/18 prices, and excluding revenue lagging adjustments

Return on Regulatory Equity (RORE)

Our eight year RORE forecast is summarised in chart and table below. Our method of RORE calculation is aligned to the approach used by Ofgem in the production of the RIIO-GD1 Annual Reports. We have endeavoured to ensure that the forecast reflects our best available view of eight year RORE performance, reflecting the revised totex positions submitted in the 2018 RRP, inclusive of the expected consequential effect to RAV balances.

8 Year Forecast RORE Performance (post tax, real)



RORE PERFORMANCE	RIIO GD-1				
CATEGORY	**EAST OF ENGLAND**	**LONDON**	**NORTH WEST**	**WEST MIDLANDS**	**CADENT**
ALLOWED RETURN	+6.70%	+6.70%	+6.70%	+6.70%	+6.70%
INFORMATION QUALITY INCENTIVE	+0.13%	+0.17%	+0.14%	+0.14%	+0.14%
TOTEX	+0.60%	+2.86%	+1.67%	+3.10%	+1.83%
EXIT INCENTIVE	+0.55%	+0.35%	+0.40%	+0.25%	+0.41%
SHRINKAGE	+0.05%	+0.05%	+0.04%	+0.04%	+0.05%
EMISSIONS	+0.24%	+0.23%	+0.21%	+0.22%	+0.23%
BROAD MEASURE OF CUSTOMER SATISFACTION	+0.28%	+0.17%	+0.28%	+0.22%	+0.24%
DISCRETIONARY REWARD SCHEME	+0.01%	+0.01%	+0.01%	+0.01%	+0.01%
RETAINED TAX	+0.12%	+0.12%	+0.13%	+0.12%	+0.12%
GSOP PAYMENTS	(0.04%)	(0.15%)	(0.03%)	(0.03%)	(0.06%)
FINES & REDRESS PAYMENTS	(0.01%)	(0.01%)	(0.01%)	(0.02%)	(0.01%)
OVERALL RORE PERFORMANCE	**+8.62%**	**+10.49%**	**+9.54%**	**+10.75%**	**+9.66%**

Relative to our 2016/17 RRP submission, we estimate that our revised Totex forecasts have reduced our overall RORE forecast by 0.23%. This is shown by network and totex category below:

IMPACT OF REVISED TOTEX FORECAST	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
LOAD RELATED CAPEX	(0.47%)	(0.21%)	(0.15%)	+0.03%	(0.24%)
NON LOAD RELATED CAPEX	+0.20%	+0.10%	+0.07%	+0.07%	+0.12%
OPEX	+0.18%	+0.24%	+0.44%	+0.46%	+0.31%
REPEX	(0.47%)	(0.08%)	(0.64%)	(0.46%)	(0.42%)
TOTAL	**(0.56%)**	**+0.04%**	**(0.28%)**	**+0.10%**	**(0.23%)**

With regard to RIIO-GD1 Uncertainty Mechanisms, we have assumed that our recent Streetworks application for the East of England network is determined by Ofgem at the level cost submitted. For the Smart Metering Rollout Uncertainty Mechanism, although an application is yet to be made, we have assumed that this will be determined at the level of eight year cost forecast indicated in the 2018 RRP submission. No other allowance adjustments in respect of Uncertainty Mechanisms are anticipated in RIIO-GD1.

The RORE impacts of these assumptions are shown in the table below:

IMPACT OF UM ASSUMPTIONS	EAST OF ENGLAND	LONDON	NORTH WEST	WEST MIDLANDS	CADENT
STREETWORKS	+0.20%	-	-	-	+0.07%
SMART	+0.13%	+0.09%	+0.10%	+0.10%	+0.11%
TOTAL	**+0.33%**	**+0.09%**	**+0.10%**	**+0.10%**	**+0.18%**

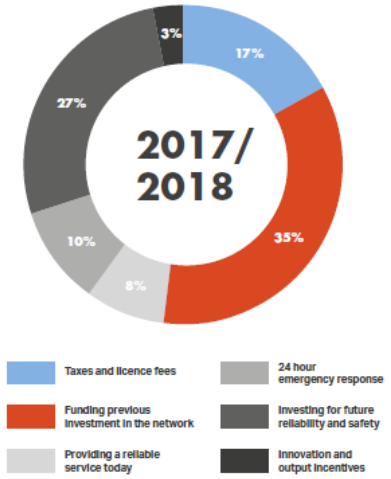
We have also included our current view of eight year forecast for output incentives, consistent with the positions reported in the Output Incentive section, and an assumption for future GSOP payments has been included on the basis of the average five year actual positions observed.

Customer Bill Impact

2017/18 Average Domestic Bill

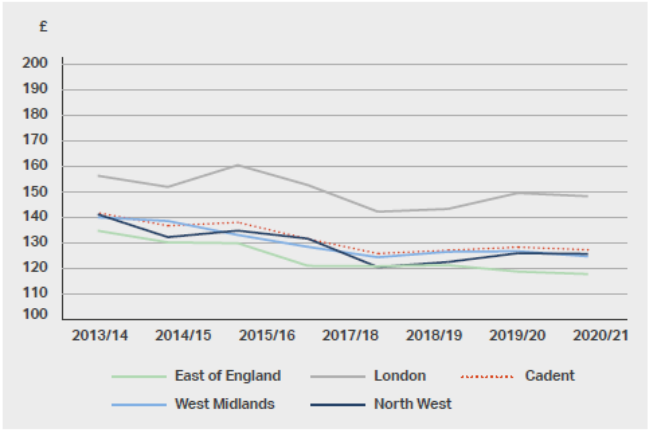
The following section provides a breakdown of our average domestic bill both from a Cadent wide perspective and also by individual network.

Average domestic bill breakdown



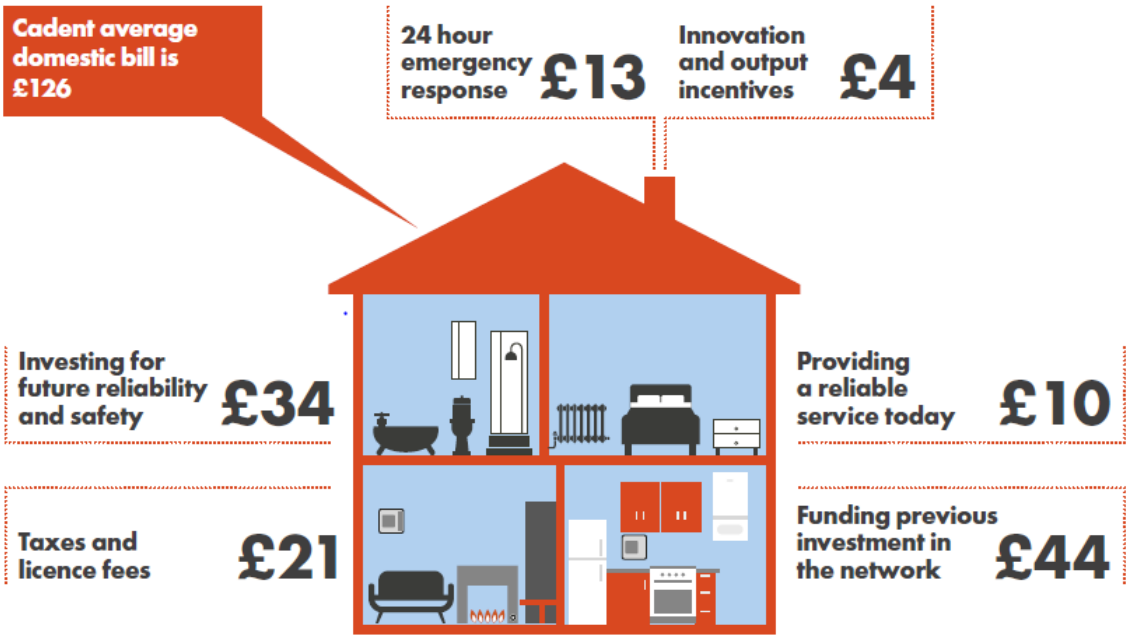
Average domestic bill – 2017/18 prices

£14 reduction over RIIO-GD1, the rise in 2019/20 due to the increase in business rates resulting in circa £4 added to domestic customer bills

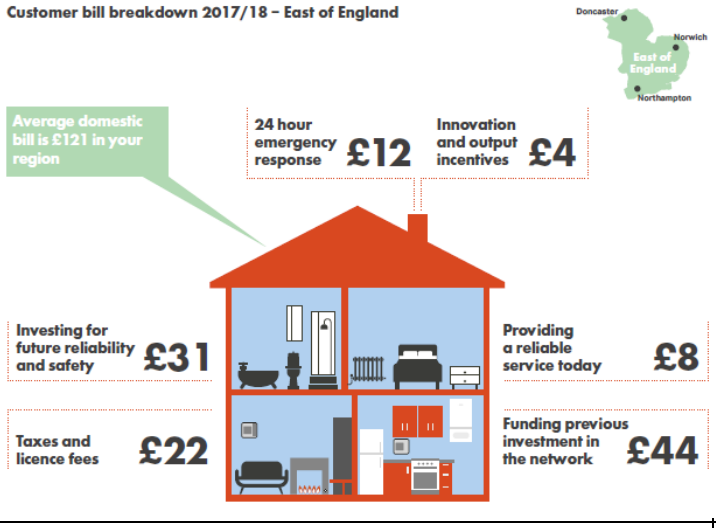


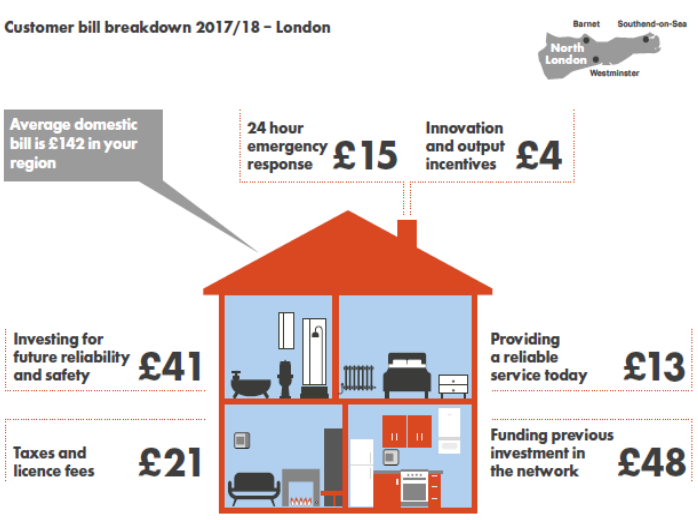
Taxes and licence fees	Funding previous investment in the network	Providing a reliable service today	24 hour emergency response	Investing for future reliability and safety	Innovation and output incentives
Taxes and business rates paid to central and local government. Also includes the licence fee for industry regulation	Repaying the costs of past investments to construct today's network, like a mortgage	Operating and maintaining equipment to transport gas to you safely and reliably	Taking your calls, attending gas emergencies and making safe	Replacement of old assets and extensions to the network to meet future needs	Innovation and incentive reward for improving customer experience and reducing carbon emissions

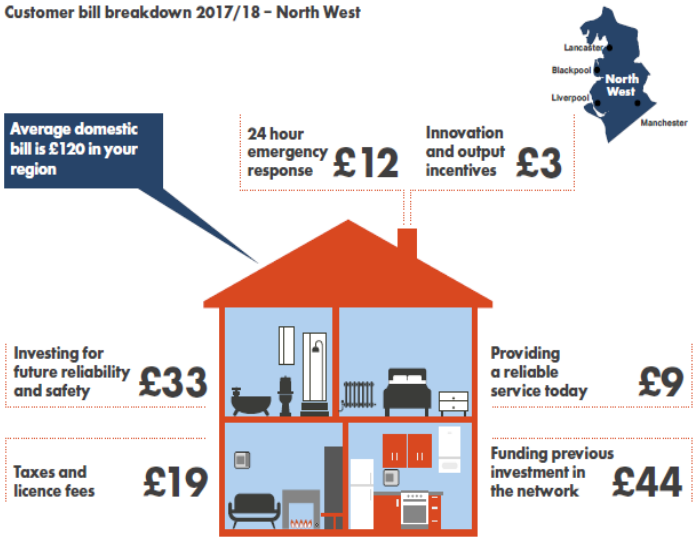
Cadent customer bill breakdown 2017/18

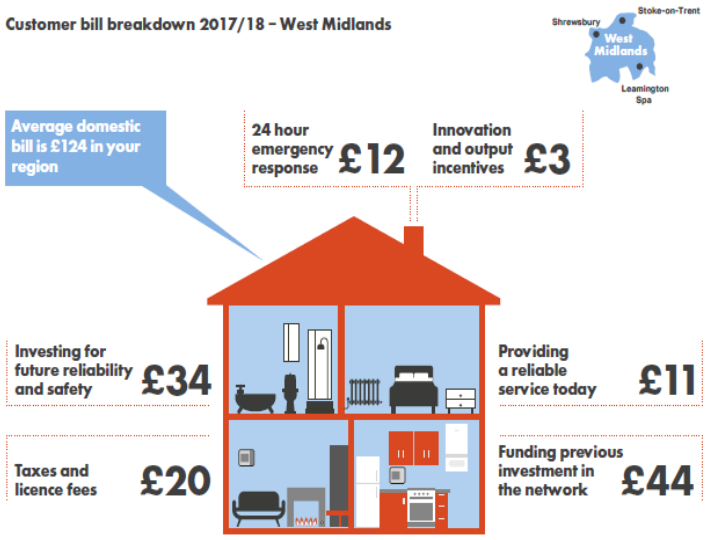


Customer bill breakdown by network



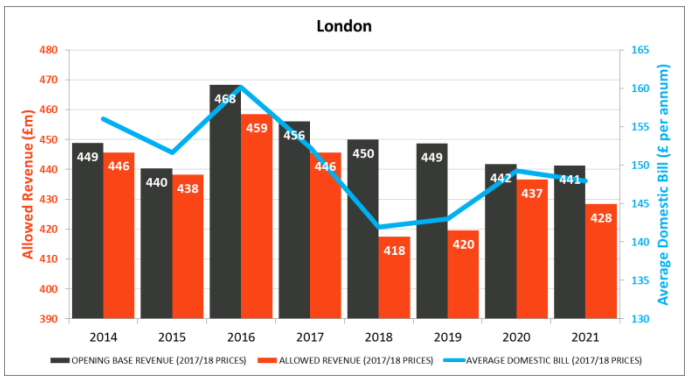


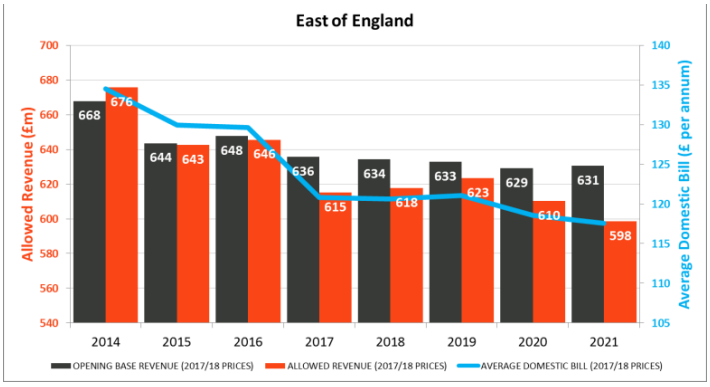


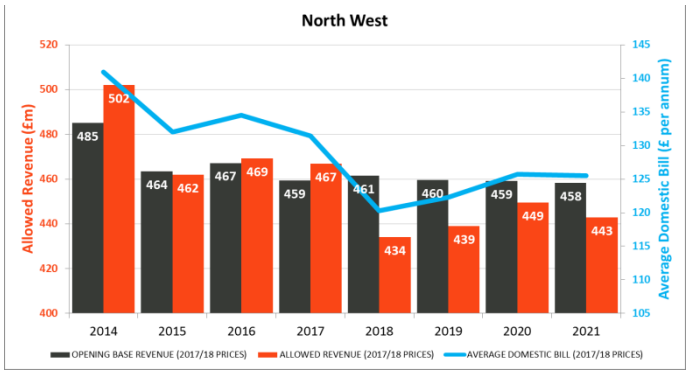


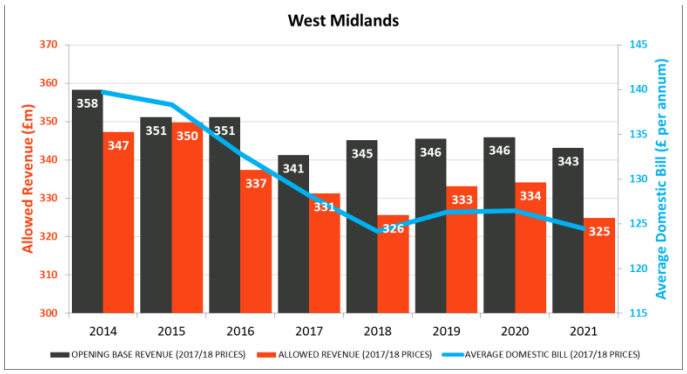
RIIO-GD1 Forecast

Overall we anticipate that our share of average domestic bills will reduce by £14 per annum (or 10%) in real terms across RIIO-GD1. The graphs below illustrate actual and forecast revenue against opening allowances per the RIIO-GD1 final proposals, and forecasts for average domestic bill over the eight year period:



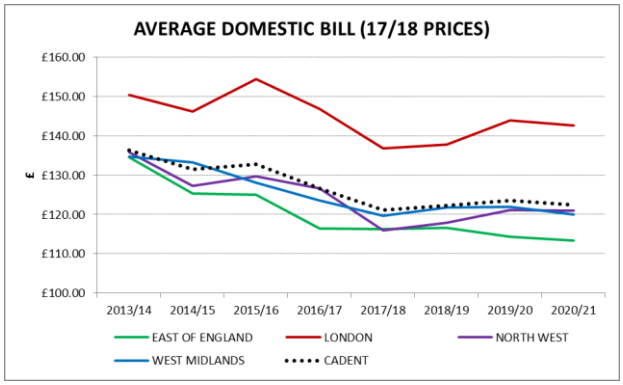


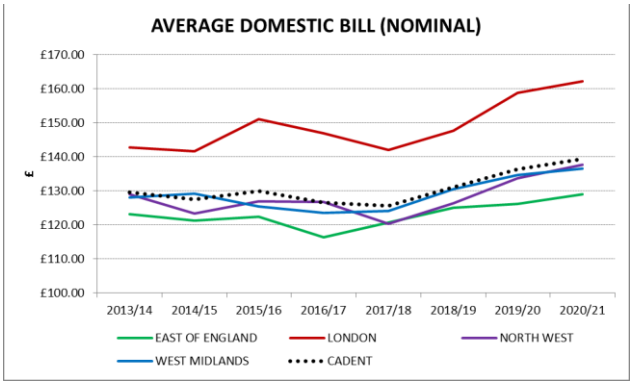




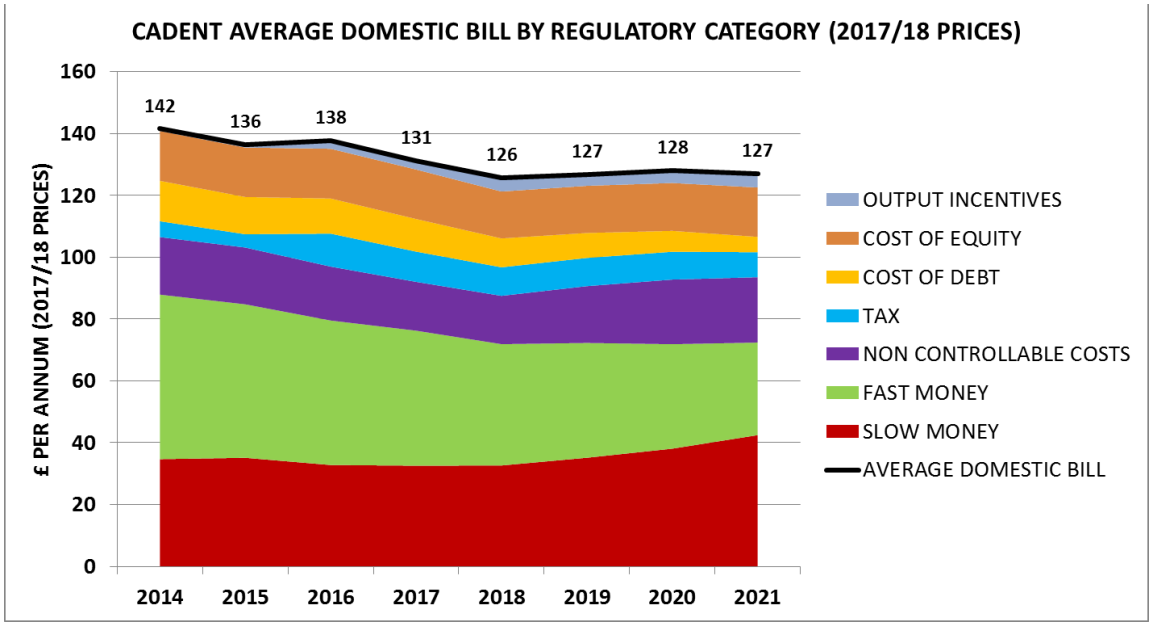
AVERAGE DOMESTIC BILL (17/18 PRICES)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
EAST OF ENGLAND	£134.50	£125.27	£124.95	£116.43	£116.29	£116.67	£114.26	£113.33
LONDON	£150.35	£146.14	£154.36	£146.84	£136.82	£137.85	£143.85	£142.63
NORTH WEST	£135.85	£127.23	£129.69	£126.68	£115.92	£117.87	£121.18	£120.95
WEST MIDLANDS	£134.69	£133.32	£128.05	£123.58	£119.66	£121.73	£121.91	£119.99
CADENT	**£136.40**	**£131.54**	**£132.79**	**£126.55**	**£121.06**	**£122.26**	**£123.47**	**£122.47**

AVERAGE DOMESTIC BILL (NOMINAL)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
EAST OF ENGLAND	£123.16	£121.33	£122.33	£116.43	£120.64	£125.04	£126.13	£128.92
LONDON	£142.83	£141.55	£151.12	£146.84	£141.94	£147.74	£158.80	£162.25
NORTH WEST	£129.05	£123.23	£126.97	£126.68	£120.26	£126.32	£133.77	£137.59
WEST MIDLANDS	£127.95	£129.13	£125.36	£123.58	£124.14	£130.46	£134.58	£136.49
CADENT	**£129.58**	**£127.41**	**£130.00**	**£126.55**	**£125.59**	**£131.03**	**£136.29**	**£139.31**





The graph below shows our average domestic bill forecast for RIIO-GD1 by Allowed Revenue category. Going into RIIO-GD2, we consider that such analysis will be a useful tool in helping our Customers to understand the composition of our share of energy bills, and in helping to set expectations around the potential degree of movement by category across the next price control, and the sensitivity of bills to different funding options.



***A note on our methodology for average bill calculation**:*
We have maintained the methodology for calculation of average domestic bills in line with that adopted in our last RRP submission. The key difference to the approach adopted by Ofgem in their 2016/17 Annual Report is the volume assumption used. Ofgem uses the Typical Domestic Consumption Value (TDCV) which is based on median average values, where as we adopted the mean average consumption by supply point in the 0 to 73,200 kWh per annum load band. Given that our transportation unit prices are driven by both changes to allowed revenues and average demand, we consider that this approach best emulates true network level variability. Additionally, we have presented numbers in 2017/18 prices for the most part in order to isolate the real price impacts of the RIIO-GD1 framework.

5. Appendix

In this section we describe those outputs where we believe there is a risk to the delivery of our 8 year target or where we are not where we would like to be in relation to an annual target. In addition we have outlined particular anomalies and data methodology changes.

Outputs

Unplanned Interruptions – NL Durations (MOBs)

As stated earlier in the section 4 (Performance summary), we have experienced unprecedented focus around gas supplies into multi occupancy buildings. Whilst the impact has been most pronounced in our North London network, implications have been felt in all of our networks though an order of magnitude differently in North London.

With regards to unplanned interruptions, we did not seek to forecast the impact of increased requests regarding MOBs from Local Authorities as part of the RRP return for 2016/17. However, by the time that Ofgem published the loss of supply consultation, a picture was emerging which we subsequently reflected in our proposals for the revised targets. The following table shows the trace of our proposals for volumes and durations from last year's RRP forecast for 17/18, to the consultation outcome for 17/18.

Unplanned Interruptions Volume – MOBs:

Network	Duration 2017/18 Forecast	Consultation Proposal (Cadent)	Consultation Outcome	2017/18 Actuals
EofE	134	393	393	264
Lon	1,685	2,769	2,769	1,848
NW	77	77	77	299
WM	119	119	119	151

Unplanned Interruptions Duration Trace *(millions of minutes)* – *(MOBs)*:

Network	Duration 2017/18 Forecast	Consultation Proposal (Cadent)	Consultation Outcome	2017/18 Actuals
EofE	2.3	13.1	13.1	6.8
Lon	48.5	124.7	48.5	111.1
NW	1.1	1.1	1.1	1.1
WM	1.6	1.6	1.6	5.5

Whilst the final outcome to the consultation was a combined target for MOBs and non MOBs properties this table outlines the challenge we face particularly for North London where it can be seen our durations are already significantly higher than the consultation outcome.

We have continued to implement remedial actions for example;

- Rapid repair solutions (polymer filled repair clamp /self-amalgamating tape);
- Riser and component remediation solutions (iSeal/ePipe);
- Preventive riser coating solutions; and
- Revised operating practices, such as the utilisation of Cadent Repair Teams to undertake 'in ground' work

We are continuing to look for improvements in our performance but with the heightened interest in high rise buildings coupled with the recent programme of high-rise building surveys there is an increased risk to Cadent delivering the unplanned interruption duration target predominantly in our North London network. Given the potential outcomes of the

various inquiries being held and how this may drive local authority behaviours or policies in relation to MOBs we will not be publishing unplanned forecasts this year. We will keep this under continuous review and if the outlook becomes more stable will assess whether to reinstate forecasts in future years.

Length of main off risk – Secondary output

In 2017/18 we were targeting an increase in our Tier 1 mains replacement however the length of main replaced decreased approximately 4% from 2016/17. This decrease is as a result of an unprecedented increase in infrastructure and construction growth, leading to significant resource constraints, major skill shortage and market pressures. Delivery has then been further impacted by reduced scope of planned innovation. Although, this position is not ideal we recognise the challenge and are addressing this both, internally and externally with our Strategic Partners. The following section outlines performance in each of our networks and the actions we are taking to achieve our RIIO-GD1 target.

Delivery in East of England decreased from 2016/17, however there has been a significant increase in the volume of Tier 2 and Tier 3 delivered. This step up in delivery of larger diameter works is to ensure delivery of outputs across all Tiers by the end of the period and is expected to continue across the remaining three years. To address the under-delivery in Tier 1, we are focussed on three key areas;

- Engaging additional resource – utilising the existing supply chain to increase resource numbers.
- Funding additional training and recruitment from sources not currently engaged in our work programmes – understanding the market pressures, we are funding/providing training for the existing supply chain. This enables these smaller organisations to grow their businesses without the risk of funding costly training to then potentially lose those resources to other construction/infrastructure organisations.
- Implementing a revised operational structure – mobilising teams in the outer London area of East Anglia, an area we have previously been unable to mobilise due resource competition and competing rates.

In London, Tier 1 delivery is broadly in line with 2016/17 performance however there was a decrease in the volume of Tier 2 and Tier 3 delivered, largely due to difficulty obtaining road space and Local Authority agreement. Tier 1 delivery in our London network is approximately 1.5% behind linear target, although behind, we do not foresee this as a significant challenge and expect to recover this position in 2018/19. Our biggest challenge in London is the delivery of larger diameter Tier 3 works, where we were anticipating planned innovation would support in the latter years of the period. On assessment and trial of these innovations, it has been determined that they are not ready for deployment, nor would they improve either the cost or pace of delivery. In order to deliver the required output there will be a need to revert to more traditional techniques during the remaining RIIO-GD 1 period, which we are currently scheduling into our work programmes. We will however continue to explore remediation using CISBOT and intend on deploying this technology and approach in line with the other Distribution Networks.

In North West, delivery was in line with 2016/17 performance although remains behind expected delivery and linear target. To address this both Cadent and our Strategic Partner, have set up Project Teams to develop and embed a recovery plan to drive the required performance levels across replacement delivery as well as other contract measures.

Delivery in the West Midlands decreased across all Tiers compared to the previous year, with cumulative delivery approximately 5% behind the linear run rate. The recovery plan to address this under-delivery focusses on initiatives that increase productivity supported by additional recruitment.

Customer Satisfaction - Planned work (WM) and Connections (NL & WM)

Whilst we have delivered improvements in customer satisfaction in many areas across our networks, locally driven initiatives for Planned Work (WM) and Connections (NL & WM) did not deliver at the rate required. As a result in 2017 Cadent developed its new customer strategy based upon extensive external benchmarking and a focus on the blockers preventing us delivering consistent great customer experiences.

Whilst the full strategy will be delivered over a number of years it focuses on both short term incremental improvements as well as longer term step changes. The key building blocks of the strategy are:

Designing and embedding a customer centric operating model.

- **Short term:** Migration of complaints handling into the networks rather than a central function has meant that issues can be resolved swiftly. This has already delivered significant benefits as shown by this year's performance.
- **Long term:** The operations and connections transformation programmes are being designed to deliver improved customer experiences through establishing network aligned accountabilities for customer performance and a far greater service delivery focus across the organisation.

Real time customer feedback

- **Short term:** We have implemented "Rant & Rave" which allows customers to give real time feedback via SMS. This enables immediate interventions to take place to improve customer experiences.
- **Long term:** We are investing in our social media presence and looking at long term technology options to further enhance our real time links with customers.

Big Data and Analytics

- **Short term:** We have recruited a number of Data Scientists to support our development of Artificial Intelligence and machine learning to build customer sentiment analysis into the existing pool of customer data we hold.
- **Long term:** We will establish a comprehensive data lake of customer data which will enable us to establish customer segments and allow tailored service offerings to suit more specific requirements.

Consistent Customer Aligned Incentives

- **Short term:** We have aligned our managers' annual bonus reward scheme to reflect our customer performance levels and built additional financial and non-financial measures into our construction contracts.
- **Long term:** We intend to cascade customer measures further across employee reward and recognition schemes. Longer term customer performance incentives will form a significant part of future construction contracts.

Onmi-Channel Communications

- **Short term:** Our SMS and social media options have been enhanced over the last 6 months.
- **Long Term:** A significant investment into our website will be made in 2018 followed by enhancements in social media, SMS and later into customer self-serve options.

Technology enhanced

- **Short term:** We have created an internal Customer Insights Team in the Customer Centre to pool and analyse customer feedback from a variety of sources, which feeds directly into our overall performance management framework and change prioritisation landscape.
- **Long term:** New CRM system creating single view of customer responses and linking entire organisation**.**

Construction Partner Recovery Plans

We have been working closely with both TRIIO in the East/London and Balfour Beatty in the West Networks to develop comprehensive recovery plans. These focus on ramping up mains replacement delivery and improving customer performance levels. They focus on the end-to-end process of delivering for customers, but with a key lens on the three areas where we did not achieve the CSAT targets last year. In these areas, additional customer facing roles are being introduced. Additionally, there have been several changes to senior roles within Balfour Beatty, which we believe will support us in embedding a stronger customer focussed culture throughout the organisation.

Data methodology

The following section outlines where we have identified where data tables require additional review.

A new format Table 2.1 was implemented for the 2016/17 RRP submission. This includes certain yellow input cells which are used to re-categorise or adjust the totex positions initially fed from Table 2.2. On validation of the table for the 2017/18 submission, we found that the values relating to the 'Adjustment for Efficient Level of Fines & Penalties' and 'Re-categorisation of Holder Demolition Costs' included in the input cells for the period 2013/14 to 2015/16 had been previously wound back to 2009/10 prices on an incorrect basis. The corrected positions have been reflected in our 2017/18 submission, however we would point out that the corrections result in relatively minor differences to the positions previously reported, and for the most part simply create an adjusted switch between capex and opex categories, as opposed to any absolute change to overall totex. The re-categorisation would give rise to very low level base revenue corrections relative to the positions calculated through previous Annual Iterations Processes when updated cumulatively in the Price Control Financial Model. These will be inconsequential, but nonetheless, we wish to ensure that our allowed revenue determination reflects the corrected positions via the next Annual Iteration Process.

During the course of our review we note that the unplanned interruptions forecast data reported in Table 2.5 across the period to date includes major incidents, however these are excluded in the rebased targets set by Ofgem. As a result of this the Forecast RIIO-GD1 total and the Final Proposals are not aligned. Since we have completed our governance process, the tables have now been signed off by our CEO and our narrative circulated to the Board for review we propose that this is corrected post submission at the end of July.

This year we have looked to drive consistency in reporting for risers in table 5.4 and as such have referred to the RIGs definition given in table 4.6 (connections) which states *"When a building has multiple individual risers that are only connected via underground pipe but supply the same building they should be counted as multiple risers".* This has resulted in an increase in the numbers of risers we are reporting for 2017/18 and we are intending to adopt this same principle to review the riser volumes previously reported.

In line with our overall approach to continuous improvement in reporting we are amongst other things, putting in place enhanced processes and controls around our GSOPs.

With regards to table 7.3, in last year's RRP submission Cadent submitted its 'rebased' business plan (BP) using the agreed monetised risk methodology to derive equivalent output targets. At the time Cadent used Excel models to implement the agreed methodology. These Excel tools had a number of limitations due to the volume of data held by the business.

During the last year Cadent has invested in an industry leading suite of tools (ICS' Asset Investment Manager (AIM) software) to allow the monetised risk methodology to be executed with more precision and confidence.

During the process of implementing the new software, a thorough verification has been carried out to ensure that the monetised risk methodology has been accurately and consistently replicated within the ICS software. This assurance process has confirmed that no changes have been made to the monetised risk methodology that Cadent has used to derive equivalent output targets.

During the population of the asset base and the application of interventions for 2017/2018 RRP submission, a number of assumptions and data transformation steps have been made which differ from those used in last year's submission. Due to these changes Cadent is refreshing the 'rebased' position in this year's RRP.

We propose that these revised outputs targets supersede last year's baseline targets, and the following will be stated in Table 7.3 of the 2017/18 RRP submission:

a) What the monetised risk position would have been at the start of GD1 (2013)
b) What the risk will be at the end of GD1 without any intervention (2021)
c) The risk at the end of GD1 if the interventions laid out in the original BP were delivered
d) The current 2016/17 year end risk position

Organisational changes

The changing shape of the Board, under our new ownership, has brought a change in the Board culture. This has moved from a divisional and perhaps more narrowly focussed perspective to one that has a more external-facing outlook, with greater levels of scrutiny across a broader horizon.

This rapid evolution is important in ensuring that the removal of the previous parent organisation infrastructure does not diminish but rather, where possible, enhances oversight. In order to be ready to meet this challenge, our first priority was to ensure that the new Board members were given an induction into the Cadent business as each of them was appointed. The particular aim of this process was to ensure that Board members understood the levers that are available to improve business performance sustainably. Increased focus

on the operational performance of the business is an important objective of the Board over the coming year.

In tandem with this, we have developed the new Board's constitution, meeting calendar and processes so that they are appropriate for the new Board environment. In some respects, there is no change in approach; ensuring that the business continues to meet all of its regulatory commitments continues to be one of the Board's key priorities. In other respects, however, a new approach is being nurtured, particularly in developing a strategic process that learns lessons from the past and progresses Cadent's operational effectiveness.