Wales & West Utilities

RIIO-GD1 Sixth Year Annual Report

Year ended 31 March 2019

Continuing to deliver for our customers

WALES&WEST UTILITIES

Strategic Performance Overview

Strategic Performance Overview

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Continuing to deliver for our customers

In this section:

1.0 Continuing to deliver for our customers

Throughout 2018/19 the energy sector has remained under the spotlight with discussions about future nationalisation and the UK legislating for "Net Zero" by 2050; after declaring a climate emergency. The effective and efficient decarbonisation of heat and transport remain the key challenges for us all. As a business we have engaged and focussed on the development of the RIIO-GD2 framework and the sector specific proposals for gas distribution. It is against this backdrop, that I am pleased to present our latest strategic performance report.

As the use of our network continues to expand to new user groups in a changing energy system we're continuing to build on our successes to deliver for all our customers – including the most vulnerable across our region. Some of our 2018/19 performance headlines include

- Delivery of all our regulatory commitments whilst spending less than our regulatory allowances thereby returning to consumers their share of this saving. Despite this, there is significant cost pressure starting to appear, in particular as competition for labour increases
- Our best customer satisfaction score to date - 9.18. This put us second against all eight of the gas distribution networks
- Zero Ombudsman rulings and resolution of 84% of complaints within 1 day – which again is our best performance to date
- We have seen a further reduction in the customer bill of 3% between 2018/19 (£121) and 2017/18 (£125) and from £154 (21% reduction) at the start of GD1 (all in 2018/19 prices).
- Forecast bill at the end of RIIO-GD1 – we remain on track to have a lower bill at the end of RIIO-GD1 compared to the start of the control – outperforming our business plan commitment of a slight increase
- Engagement with over 26,000 stakeholders through a range of communication channels resulting in 190 actions
- 4,227 customers referred to the Priority Service Register and 4,830 Carbon Monoxide alarms distributed within 2018/19
- Saved over 1,000 families an average of £755 per annum through our Healthy Homes, Healthy People programme
- 30 Carbon Monoxide safety sessions engaging over 1,000 pupils
- Establishment of our Customer Engagement Group that will help shape our future business engagement
- The recovery of more than £326,000 from unregistered gas users

Once again, our efforts have been recognised across the board with a range of external recognitions including:

- A unique "ROSPA Gold" award for the sixth year in a row
- Winners of the ROSPA Oil and Gas sector award
- The Customer Service Award for the 7th time in 11 years at the national IGEM/EUA awards
- The Clean Energy Scheme Awards at Regen's Green Energy Awards

We are very proud of all of these achievements as we continually seek to further improve the service we provide to customers. Our published 2018/19 annual Stakeholder report (https://wwutilities.co.uk/about-us/our-company/publications/) provides further detail on the key activities and outcomes delivered during the year

Looking ahead

Our owners continue to fund a significant shortfall in funding allowance for our debt costs and we have addressed this for the next control period within our draft RIIO-GD2 business plan.

We have now delivered our most stakeholder informed draft Business Plan for RIIO-GD2 to the Ofgem Challenge group and we look forward to receiving its feedback ahead of final submission to Ofgem during December. We must make sure that RIIO-GD2 delivers for all stakeholders and provides a sustainable rate of return to attract the investment and innovation needed to deliver stakeholder ambitions against a very challenging investment environment.

We're committed to working closely with all stakeholders to make sure that we continue to deliver the value for money services that energy consumers want and need.

At the heart of our success are our people - from the front line to back office support. The outstanding value for money service we continue to provide is very much down to them. Our values driven culture, recently accredited by Investors in People, supports and challenges our people to deliver for customers in an effective, innovative way.

Leading Wales & West Utilities remains a great privilege for me. I want to thank colleagues, customers and all our stakeholders for their continued support, and I look forward to continuing to work with you all. I trust you find this report of interest.

Graham Edwards

Chief Executive

Wales & West Utilities

1.1 Board Statement

Board Statement

Our ambition is to continue to deliver outstanding levels of gas safety, reliability, and customer service so that we are trusted and valued by the millions of people we serve every day – now and into the future.

The Company's vision of success is to be consistently recognised as a top performing company by our stakeholders and regulators.

Underpinning this strategy is a strong compliance culture which the Board directly monitors through its Health Safety & Environment, Audit and Treasury committees. Incentive arrangements for the senior management team are directly linked to safety, customer and efficiency targets. These targets are updated annually.

I am pleased to report that the Company has met all the output targets agreed as part of the RIIO-GD1 price control in 2018/19 and continues on track to deliver the output targets across the remainder of the RIIO-GD1 price control. The Company has again demonstrated strong customer service and safety performance throughout the year.

The focus of the Board is to support the strategy through significant investments and innovations aimed at improving the performance of the business.

The principal risks associated with the business, and the associated mitigations, are regularly reviewed by the Board and remain largely unchanged over the course of the year. These include breach of legal and regulatory obligations, health and safety failure, network asset performance failure, employee retention and financial risks associated with interest rates, liquidity and credit.

The long term future of the business is directly linked to the role of gas networks in meeting the UK's decarbonisation targets. The expanding role of the gas network, as highlighted by the increase in green gas connections and peaking power plants, shows significant opportunity for energy customers from increased integration of the gas and electricity networks, together with increased renewable gas and renewable electricity.

In the home, Project Freedom (the use of hybrid appliances and smart controls) will play a significant part in delivering the low carbon, low cost and secure heat required beyond 2050.

More generally it is important the UK government and Ofgem recognises and fully understands the current and future role of gas networks in meeting the energy needs of the UK.

The current debt index used in RIIO-GD1 to fund the interest costs of the Company does not adequately fund our efficiently incurred cost of debt. The next price control period (RIIO-GD2) is a clear opportunity for the regulator to address such issues and support and stimulate efficient investment in the gas network to help support the key government ambitions in Wales and Great Britain.

As a Company we will continue to influence policy makers by making the case for effective use of the gas grid and decarbonised gas as essential elements of a low cost, low carbon and sustainable energy system as the UK aims for a Net Zero Energy system.

Andrew J Hunter

Chairman of the Board

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Strategic Performance Overview

In this section:

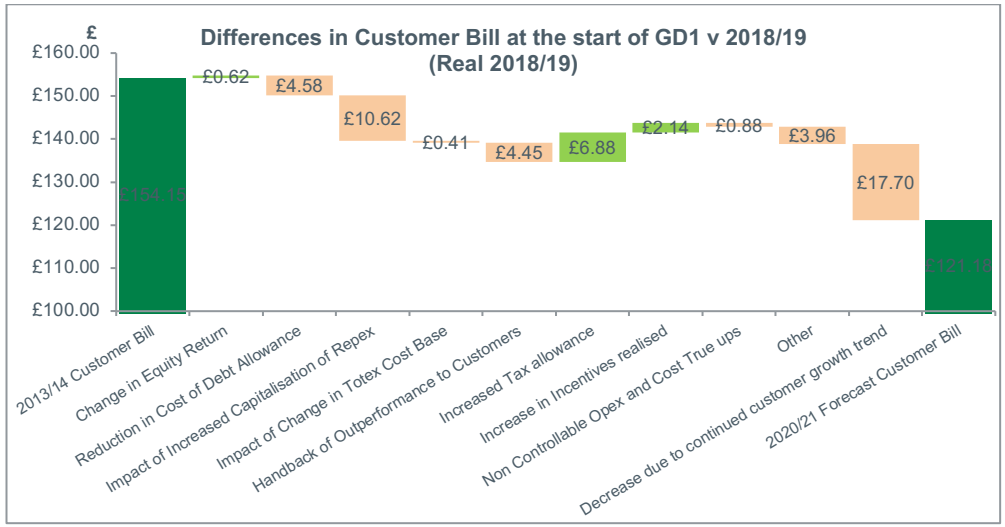
2.0 Strategic Performance Overview

2018/19 Summary Performance

RIIO-GD1 Forecast Performance

2.1 Customer Bill Update

We have seen a further reduction in the domestic customer bill of 3% between 2018/19 (£121) and 2017/18 (£125) and from £154 (21% reduction) at the start of RIIO-GD1 (all in 2018/19 prices), consumers only benefit if passed on by shippers. Figures exclude Exit Capacity charges.

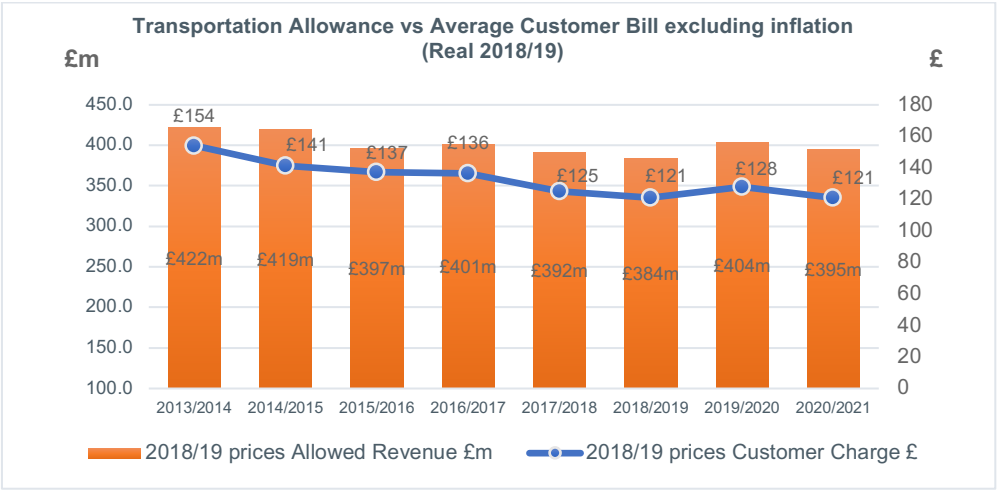


From the start of the price control the domestic customer bill (excluding inflation) has steadily fallen. Customer bill movements fall into two elements, movements in our "Allowed Revenue" which we set our prices to collect; and changes in customer numbers and volumes of gas flowing through our network each year. I.e. if there are a greater number of customers, the revenue to be collected from each customer will decrease.

The most significant movements between the start of GD1 (2013/14) and 2018/19 are explained below:

- Domestic customer growth trend – over the course of RIIO-GD1 our domestic customer base has increased and the average AQ used by each customer has decreased. The net effect of this is to reduce the amount paid by each customer.
- Increased capitalisation of Repex – the Repex capitalisation rate increases from 50% at the start of RIIO-GD1 to 100% at the end of RIIO-GD1 (86% in 2018/19). This increases the proportion of slow to fast money. As slow money is spread over 45 years, an increase in the proportion of slow money reduces our allowed revenue in the short term.
- Increased tax allowance – there was no tax allowance in 2013/14 due to the use of regulatory losses.
- Reduction in cost of debt allowance - WWU is funded for a return on RAV. The return rate is based on cost of debt, equity and gearing. Cost of equity and gearing remain constant through RIIO-GD1. However, the cost of debt allowance is based on the rolling 10 year iBoxx index which is decreasing and therefore causes a year on year reduction in return.
- Handback of outperformance to customers - where we spend less than our Totex allowance in a given year, part of this underspend (36.8%) is passed back to customers through reduced allowed revenues.

Customer Bill Forecast to the end of RIIO-GD1



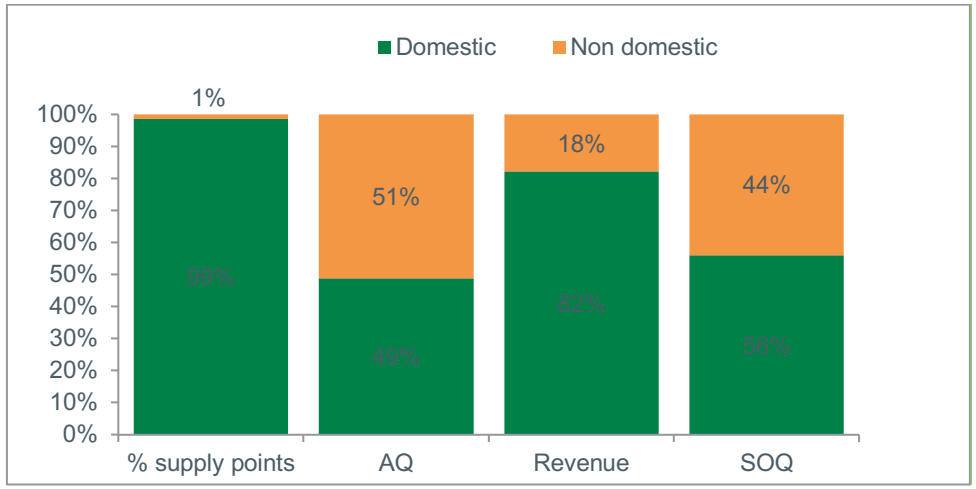
Figures exclude NTS exit capacity charges

In 2019/20, the cost true up for business rates increases the allowed revenue for WWU, this has a corresponding increase in charges for the customer. The total customer bill movement of £7 from 2018/19 to 2019/20 includes c.£4 which relates to non-controllable cost true ups.

Our network composition has continued to marginally grow over the past 12 months and we continue to supply over 2.5m connections.

2.1 Customer Bill Update

Domestic loads make up over 99% of our connections but account for only 49% of the annual throughput, however 82% of our revenue is paid by domestic customers. This is due to the fact that large customers pay a lower unit rate on transportation charges, which is based on where they are situated within the network. A smaller customer is more likely to be at the end i.e. gas flows through more of our pipes to get to the customer. Large customers are more likely to be closer to the start of the network i.e. using less of our pipes. The unit rates are weighted so that customers that use more of the network, i.e. domestic customers bear more of the cost of maintaining it.



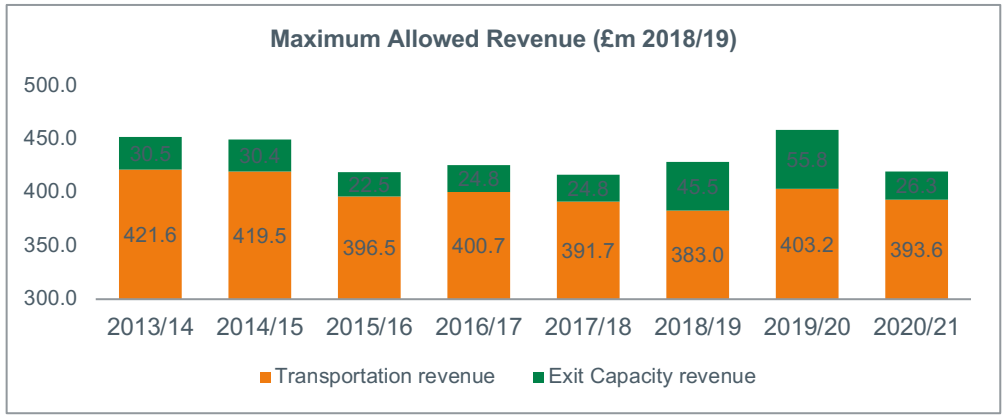
AQ = Annual quantity of gas transported

SOQ = Peak capacity usage (system offtake quantity)

Currently domestic consumers on our network use an average AQ of 12,316 kWh of gas each. The use of the average AQ is important, as the unit rates charged in any one year will reflect these. If a network's allowance remained constant throughout the price control, but its users required less capacity year on year, there would be a corresponding increase in unit rates in order to collect the allowance permitted and therefore would be no overall change in the cost to the consumer.

The Ofgem calculation of customer bills for Gas Distribution Network uses an average domestic AQ across all networks and therefore doesn't reflect the actual numbers of domestic customers connected to, and the volumes of gas flowing through, each network. We believe that this calculation should use our individual AQ figures to more accurately reflect the actual bills being charged and the number of customers connected to each network.

2.2 Forecast Maximum Allowed Revenue over the Price Control



The latter years of the RIIO price control show total allowances increasing above those in the first six years. Two key reasons behind the changes are:

1. The NTS Exit Capacity costs, the amount we are charged by National Grid for them to get gas to our 17 offtakes, increased dramatically in 2016/17 and 2017/18, from those forecast at Final Proposals (and to which our allowances were set). This results in the large increases in allowance in 2018/19 and 2019/20 (from £24.8m in 2016/17 and 2017/18 to £45.5m in 2018/19 and £55.8m in 2019/20) as a result of the two-year true up (in 2018/19 prices) as well as an increase in base allowance in these years.
2. Business Rate charges, which are a pass-through item, increased significantly at the latest valuation effective 6th April 2017 and which Ofgem deemed efficient after the network operators challenged the rating authorities. This increased annual costs from £29.3m in 2016/17 to £40.4m by 2020/21 (in 2018/19 prices).

2.2.1 Allowed vs collected for 2018/19 (excluding exit capacity)

The allowed transportation revenue in 2018/19 was £383.0m. In this year we actually collected slightly more at £385.1m (a difference to allowance of 0.55%).

This small over collection was driven by the assumption on chargeable base. We assume that each year the annual quantity (AQ) falls as the average connection becomes more efficient from new technology.

2.2.2 Forecast performance in 2019/20

Forecast allowed transportation revenue for 2019/20 is £403.2m (compared with a forecast collected revenue of £402.6m). This would result in an under recovery of £0.6m. The revenue adjustment "k", is subject to a two-year lag and so will be reflected in the pricing decision for 2021/22.

The increase in allowed transportation revenue between 2018/19 and 2019/20 reflects a large positive adjustment to the business rates allowance (£11m) as a result of the significant step up in costs that we were subject to in 2017/18, as well as a much smaller correction factor "k" in 2019/20 than in 2018/19 (£9m). The large k in 2018/19 resulted from the over collection in 2016/17, i.e. a reduction to revenue in 2018/19.

2.2.3 Forecast for allowed revenue in 2020/21

The allowed revenue in 2020/21 includes the relevant adjustments for the outturn for 2018/19 (the T+2 true up). These include:

- MODt which will pass back to the consumer the share of Totex underspend reported. MODt will further pass back to the consumer the element of saving from the lower cost of debt allowance and adjust for known reopeners.
- Incentives, which remain similar to the levels from 2019/20, reflect the strong performance against Outputs achieved. We have achieved a higher Stakeholder Engagement score in 2018/19 – 5.43, compared with 2017/18 - 5.00, which equates to an additional £0.2m in revenue.
- Adjustments for pass through costs which are forecast to decrease slightly as a result of Supplier of Last Resort Payment claims which were present in 2018/19 and 2019/20 but are not forecast for 2020/21.
- Cost True Up of our outperformance of Totex allowances in 2018/19.
- 'k' which will reduce allowed revenue in two years time in the event of an over collection in the current year and increase allowed revenue if we under collect.

2.2.4 Future forecast to the end of RIIO-GD1

The key variability over the future forecast remains within the cost true ups and exit capacity costs which have seen significant volatility over the last six years. In addition to the increases in exit capacity costs mentioned earlier, business rates increased significantly in 2017/18. In accordance with the two-year lag mechanism, WWU bore this increase in cost against allowance for two years, before it could be recovered from consumers through allowed revenue in 2019/20. If WWU is exposed to the same level of volatility in RIIO-GD2, our ability to operate a safe, reliable and efficient gas network could be affected.

2.3 Return on Regulated Equity

The return on regulatory equity ("RORE") has been calculated in accordance with Ofgem's approach in its 2017/18 RFPR report issued on 8 March 2019. This involves two measures. The first measure assumes notional gearing of 65%. On that basis, RORE was 10.0% for 2018/19 (9.4% for 2017/18). The second basis uses actual gearing. On that basis, RORE was 10.3% for 2018/19 (9.3% for 2017/18).

The main reasons for the increase (decrease) over 2018/19 are due to:-

- Higher incentive income,
- Improved Totex outperformance (including the finalisation of the allowance for the PSUP work on the six offtakes following review of spend by Ofgem), better performance in 2018/19 and improved forecast for the remaining two years,
- Improvement in the performance against the tax allowance

Shareholders continue to receive average cash returns less than RORE and the allowed real equity rate of 6.7%. Based on notional equity, for 2018/19 the real cash return received by shareholders was 1.3% (2017/18: 3.0%), and average real cash returns to shareholders for RIIO-1 are expected to be just 3.6%.

This is because the revenue allowance for cost of debt falls significantly short of the actual efficient cost of debt and derivatives. The financial impact of this serious shortfall, notwithstanding sector leading Totex outperformance driven by efficiencies realised to date in RIIO-GD1, led the WWU Board to reduce payments to shareholders

2.4 WWU Totex Outperformance

Outputs, Totex costs and workloads

The forecasted costs and workloads included within this section aim to efficiently deliver the Outputs as defined within the RIIO-GD1 Final Proposals. That said we must highlight some key uncertainties that continue to impact the forecast cost and workloads submitted within this RRP return:

- Roll out of Smart Meters ~ the minimal roll out to date has not allowed us to estimate costs associated with Smart Meters within the forecast.
- Winter severity ~ we experienced a number of mild winters in recent years with the last sustained cold winter being 2010/11. However we did experience a significant cold spell in February and March 2018. The winters of the current RIIO-GD1 period have been some of the mildest in history with the ten warmest years on record occurring since 2020. We clearly are required to plan for a 1 in 20 winter and therefore our future resource forecasts (including through the implementation of our winter contingency plan and the use of reservists etc.) reflect this requirement. However, it should be noted that our cost forecasts continue to assume an average winter.
- The economy ~ whilst the economic downturn in the first few years of RIIO-GD1 has impacted some specific workloads, for example general reinforcement and non-rechargeable Diversions. The indications are that the UK as a whole is now growing and again our future forecasts reflect a level of workload more aligned to a growing economy as opposed to a declining economy.
- Fuel poor connections ~ in the six years of RIIO-GD1 we successfully connected 9,582 customers who were in fuel poverty. Following the Ofgem review of the Fuel Poor Network Extension Scheme, a revised Output target of 12,590 connections, up from 10,800, over the eight year period was agreed with Ofgem in September 2015. Ofgem subsequently directed further changes to the scheme eligibility criteria including the removal of the IMD criteria reducing the number of connections qualifying as fuel poor. We believe this alongside a lack of funding in ECO2T and from other sources will make meeting our output target very challenging.
- Resources ~ we are seeing a decline in the number of resources we are able to recruit in certain areas of the network (predominately in the South West) along with increasing market rates. The level of recruitment and impact on costs remain a concern for WWU.

The table below provides a Totex overview of the forecast costs against the 2017/18 view.

In headline terms, the controllable costs were broadly in line with the previous five years of RIIO noting the reduction in 2017/18 due to a number of one off releases with forecast performance likely to be similar to the first four years of RIIO-GD1 (subject to the points above). There is however, clearly less certainty the further into the future we forecast.

High level controllable forecast movements below:

- Increase in Capex forecast costs compared to the 2017/18 view, due to workload for reinforcement along with SAP upgrade costs.
- Repex forecast costs remain in line with the prior year's view of RIIO-GD1.
- Controllable Opex forecast costs have decreased from the prior year's view of RIIO-GD1, due to elements such as the milder winter which are explained further within the commentary.

Forecast costs (2018/19 Prices)	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	2017/18 view
Total Capex	57.4	47.8	53.3	51.5	51.0	55.1	54.9	50.1	**421.2**	403.3
Total Repex	81.1	85.4	84.1	82.4	69.6	77.9	80.5	79.0	**639.9**	642.7
Total Controllable Opex	105.0	98.8	90.6	91.9	80.1	83.9	91.5	94.6	**736.4**	752.5
Total non-controllable Opex	83.0	83.1	82.8	108.3	119.6	88.8	84.7	84.4	**734.6**	763.0
Total funded costs – including uncertainties	**326.5**	**315.1**	**310.8**	**334.1**	**320.3**	**305.7**	**311.6**	**308.1**	**2,532.1**	**2,561.5**
2017/18 view	326.5	315.1	310.8	334.1	320.3	312.7	322.3	319.7	**2,561.5**	

- Future uncertainties related to Smart Metering and streetworks are excluded from the above table

The decrease in future non-controllable costs reflects:-

- Updated Exit Capacity charges from October 2018 following NTS price change, coming down to the historic levels we saw at the start of GD1, offset by the higher rates bills following the 2017 Valuation Office Agency review which Ofgem has confirmed continue to be pass through.

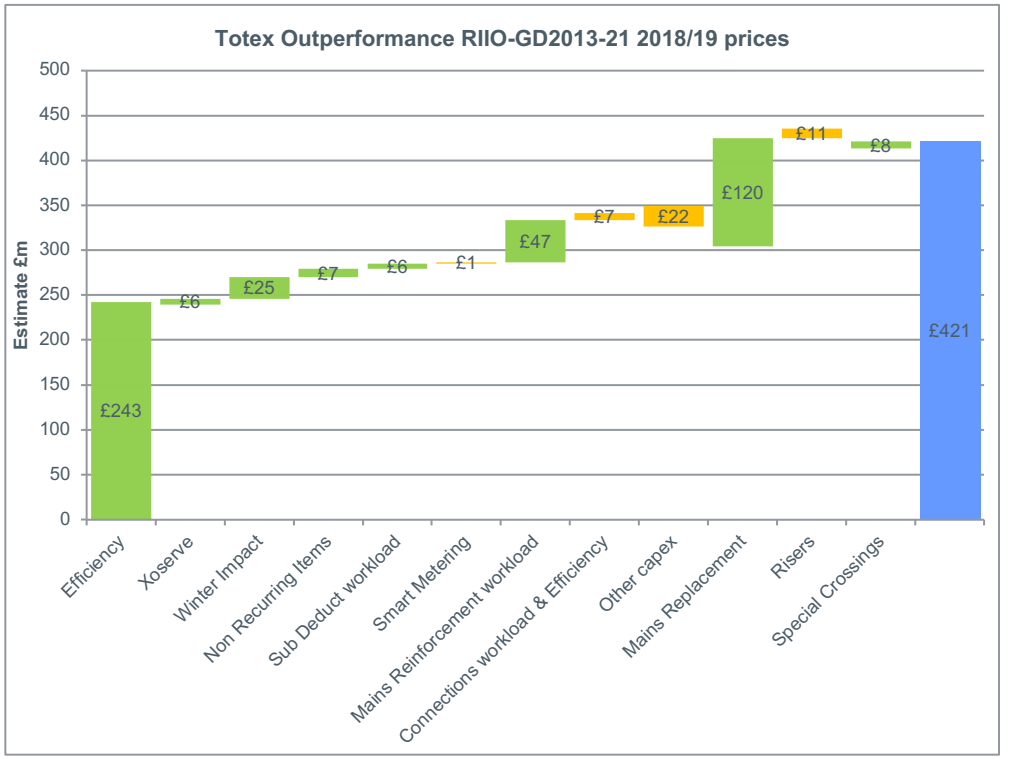
2.4 WWU Totex Outperformance

2.4.1 Totex Outperformance Summary

The forecast financial outperformance on controllable costs reported in the RRP 2018/19 for the eight year RIIO-GD1 price control period was £421.2m whilst delivering on our commitments to our customers. The information is contained within Section 3 and within the supplementary commentary submitted. See Section 3 onwards for 2018/19 and cumulative Totex performance. Data has been produced on a best endeavours basis, the allowances were set using regression analysis and therefore it is not possible to produce a detailed walkdown. A high level walk down and commentary is shown below:-

(*All financial allowances in this document match back to Price Control Framework Model as confirmed with Ofgem)

Final Proposals (18/19 prices)			Opex 875.9	Capex 513.8	Repex 828.9	Totex 2218.7
			Estimate of RIIO Totex under/overspend (£m estimate)			
Details of cost under/overspend	Cost Driver Category	Ref no.				
Efficiency	Efficiency	1	(96.6)	(74.7)	(71.8)	(243.1)
Xoserve	External factors	2	(6.0)	0.0	0.0	(6.0)
Winter Impact	External factors	3	(24.6)	0.0	0.0	(24.6)
Non Recurring Items	External factors	4	(7.2)	0.0	0.0	(7.2)
Sub Deduct workload	Efficiency/Price control assumption	5	(6.3)	0.0	0.0	(6.3)
Smart Metering	External factors	6	1.1	0.0	0.0	1.1
Mains Reinforcement workload	Efficiency/External factors	7	0.0	(47.3)	0.0	(47.3)
PSUP workload	Price control assumption	8	0.0	0.0	0.0	0.0
Connections workload & Efficiency	Efficiency/External factors	9	0.0	7.3	0.0	7.3
Other Capex	Efficiency/External factors	10	0.0	22.1	0.0	22.1
Mains Replacement	Efficiency/External factors	11	0.0	0.0	(120.4)	(120.4)
Risers	Efficiency/External factors	12	0.0	0.0	11.3	11.3
Special Crossings	Efficiency/External factors	13	0.0	0.0	(8.1)	(8.1)
Forecast Cost Spend			**736.3**	**421.2**	**639.9**	**1,797.4**
Variance			**139.6**	**92.6**	**189.0**	**421.2**



Note – the initiatives highlighted in the graph above are total business initiatives and therefore embedded in processes and activities across WWU, this is the reason for the difference in the total efficiency number of £243.1m shown in the efficiency line referenced (1) in the walk down table

2.4 WWU Totex Outperformance

Key Initiatives – Efficiency (impacting TOTEX)

Efficiency (1)

- **Working time solutions** - The introduction of Working Time Solutions in December 2012 to our operational workforce, which has optimised working patterns and reduced the ongoing overtime bill.
- **Productivity improvements**, employee contract changes and severance - The voluntary severance schemes and the introduction of revised terms and conditions for new employees along with our continued focus on productivity has significantly contributed to the success in WWU's cost base step change.
- **Contract re-negotiations** - Renegotiation with partners of key strategic contracts allowing for outperformance including a cutting edge alliance to drive maximum benefit for consumers.
- **Utilisation of FCO's** - Training all of our first call operatives (FCOs) to carry out Smart Metering Non Formula work transferred FCO labour time from our base emergency costs along with the utilisation of FCO's on replacement & capital activities providing lower costs for our customers and allowing flexibility to deliver against tough conditions such as the Beast from the East.
- **Innovation** - Techniques introduced leading to cost savings such as coil trailers for larger pipe coils and Ductile Iron Cutters.
- **Network management optimisation** - Our leading asset management strategy that strives for lowest whole life Totex cost is maintaining the health of our assets at efficient levels.
- **Other small initiatives** - We have introduced various smaller initiatives that have resulted in a cost reduction such as making employees more accountable for the equipment they use and only replacing when needed with a process of control in place.

Highlights of Opex outperformance

- Xoserve (2) - A reduction in Xoserve costs in Opex resulting from the new funding and governance arrangements (FGO)
- Winter Impact (3) - We experienced a number of mild winters in recent years with the last sustained cold winter being 2010/11. However we did experience a significant cold spell, albeit, short in February and March 2018 (Beast from the East) and ensured standards of service were met. The first five winters of the current RIIO-GD1 period have been some of the mildest in history, with the ten warmest years on record occurring since 2002. Our future forecast is based on an average winter and we are required to resource to maintain gas flow for a one in twenty winter.
- Non-Recurring Items (4) - A number of costs accrued and expected to be incurred by WWU prior to the RIIO-GD1 price control were reversed in 2017/18 resulting in a decrease in costs.
- Sub Deduct workload (5) - Our approach is based on removal of the sub-deduct network at the lowest overall cost. This has been done by using innovative ways of removing the risk, which include adoption by third parties, removal of the prime meter by installing a bypass and reconfiguring the sub-deduct set up. We have also found that a number of sub-deducts no longer exist.
- Smart Metering (6) - We have seen an impact of the Smart Metering installation programme on the number of emergency calls we receive and need to be attended to with forecasted cost expected to be £1.1m over the price control.

Highlights of Capex outperformance

- Mains Reinforcement workload (7) - To ensure our reinforcement workload is sufficient, without over-engineering, we invest significantly in network analysis tools and expert analysts to operate them. Where these tools indicate capacity issues, analysts consider a wide range of intervention options, balancing cost and benefit. These options go through a challenge and review process with operational colleagues to ensure we end up with not only the least cost solution, but one that considers future demand on the network – Lowest Whole Life Cost.

  We have outperformed allowances through:-

  - Use of excellent data and analytical tools to ensure we only intervene when necessary,
  - Innovative approaches to dealing with capacity issues - avoiding expensive and disruptive pipe laying where possible,
  - Outperforming unit cost allowances when we lay pipe, and
  - Reduced general reinforcement workload as a result of the downturn in the economy.

- PSUP workload (8) - Following an assessment by DECC (now BEIS), six of our 17 offtake sites were categorised as Cat3 or above critical UK national infrastructure and as such we were obliged to upgrade both our business security policies and the physical security arrangements for those sites.

  Site visits were undertaken in collaboration with the Centre for the Protection of National Infrastructure (CPNI) to determine the extent of work required at these sites. In order to meet the requirements from CPNI and to understand the corresponding business security requirements, as well as the process for physical security upgrades produced in collaboration with DECC (now BEIS) and Ofgem, specialist expertise was sought to produce Site Specific Operational Requirements for each site.

2.4 WWU Totex Outperformance

Following the allowance WWU received from Ofgem for the PSUP workload, costs are now matched off against the allowance in 2018/19 RRP submission.

- Connections workload & efficiency (9) – costs have increased against the allowance in RIIO-GD1 due to the following:-
  - Utilisation across TOTEX activities of our direct labour resource which can be more expensive than external resource, however this approach ensures that direct labour remain fully productive, therefore minimising overall Totex costs. This is an example of how we manage our workload and resources in a TOTEX environment.
  - We use our direct labour to complete surveys prior to most connections jobs resulting in a better experience for the customer.
- Other Capex (10) – Items such as tooling, plant and equipment have lasted longer through better maintenance and management of equipment by the business.

Highlights of Repex outperformance

- Mains Replacement (11) - We have delivered on our promises whilst driving efficiency and thus benefitting consumers. We aim to continue to deliver our stakeholder driven outputs through effective decision making, innovation and a focus on efficiency.

  The key strategic alliance contract has ensured WWU benefitted from lower delivery rates through RIIO-GD1 to date, than we would expect to see in future price controls.

  Other factors include:-

  More flexible pipe selection criteria: greater flexibility provided a short-term opportunity to design schemes that were significantly larger than had been possible previously. This was reflected in the rates we were charged, and allowed us to benefit from the following:

  Using larger teams in smaller geographical areas – the success of the five/six person team model during the first half of GD1 improved operational efficiency and produced a level of performance beyond our forecasts.

  More efficient support functions – larger teams delivering larger quantities of work in a small geographical area can be serviced more easily by support functions. For instance, logistics support functions have fewer projects to service and there is less travel time between sites. Reinstatement teams can also deal with a higher number of excavation pits in one geographical location saving on travel time.

Lower mobilisation / demobilisation costs – larger and fewer schemes reduce the significant cost of safe mobilisation and demobilisation of sites. In the remainder of GD1 scheme sizes will continue to fall, and the number of teams/schemes will increase – with a resulting impact on our cost base.

Lower management to team ratio – operational and safety management is most efficient when team sizes are maximised and the number of schemes that are in progress are kept to a minimum. The change in the design constraint allowed us to achieve this balance. Now these schemes have been depleted we are seeing a fall in the size of our teams with a related increase in scheme numbers – moving back to a similar profile as in GDPCR1.

A favourable labour market: Our mains replacement programme benefited from a reliable and consistent workforce for a number of years before contract negotiations; the labour rates in our fixed contractual pricing reflected this. In the past few years, however, this landscape has changed significantly, and labour rates are continuing to increase. This is being driven predominantly by competition with other GDNs and other capital programmes (including in the water, electricity, nuclear, telecoms and transport sectors).

We have significantly driven down mains replacement delivery costs in RIIO-GD1 through a number of innovations, some of which enable enduring efficiencies, others sustainable only in the short term.

- 500m coil trailers: Our self-funded innovation project to develop 500m coil trailers has significantly supported insertion and has reduced the number of insertion pits, pipe wastage and the environmental impact. This is now used throughout the GDNs, driving improved performance for all gas consumers.
- Ductile Iron (DI) cutters: In the first half of GD1 we avoided DI and instead targeted cast iron/spun iron because of its lower risk, and to avoid the complications and associated cost of cutting DI to connect services to the newly inserted PE main. This approach was taken to reduce the whole life cost of the programme while a more cost-effective solution was developed through our DI cutter innovation project. We led on an NIA project to develop a suitable tool that makes this activity easier and more cost-effective. DI cutters are now operational and will help to counteract the increased cost of replacement DI as we begin to replace the higher proportion of DI in our remaining programme.

However, the opportunity for such large schemes has been largely exhausted. As the proportion of 8” abandonment and Tier 2 abandonment has begun to increase we see scheme sizes reducing to a size similar to that experienced in GDPCR1. As scheme sizes have reduced, so have team sizes.

2.4 WWU Totex Outperformance

- Risers (12) - The intervention plan for Multi Occupancy Buildings (MOBs) is primarily replacement but we are leading on a number of innovation projects to develop use of cost effective refurbishment techniques. In the first six years of RIIO-GD1 we replaced 1,000 risers supplying 3,111 consumers. Although this has come at a higher cost than expected, we believe that this is the correct course of action, given the associated risks.

  Following the tragic events at the Grenfell tower we have been carrying out further checks on our high rise MOB population to ensure that the risk imposed by fire is managed appropriately. Our current spend to date of £12.1m within this asset group demonstrates our commitment to ensuring a safe, reliable supply to these types of buildings.

  We believe that although we are currently in a good position in terms of data and compliance with the IGEM standard (IGEM/G/5), this standard may be subject to change following the detailed inquiry.

- Special Crossings (13) - Intervention on Special Crossings is broadly maintaining the overall health of these asset populations. We achieved this at lowest whole life cost by innovative solutions and by utilising life extending refurbishment options where appropriate and where cost efficient.

2.4.4 NTS exit capacity revenue and charges

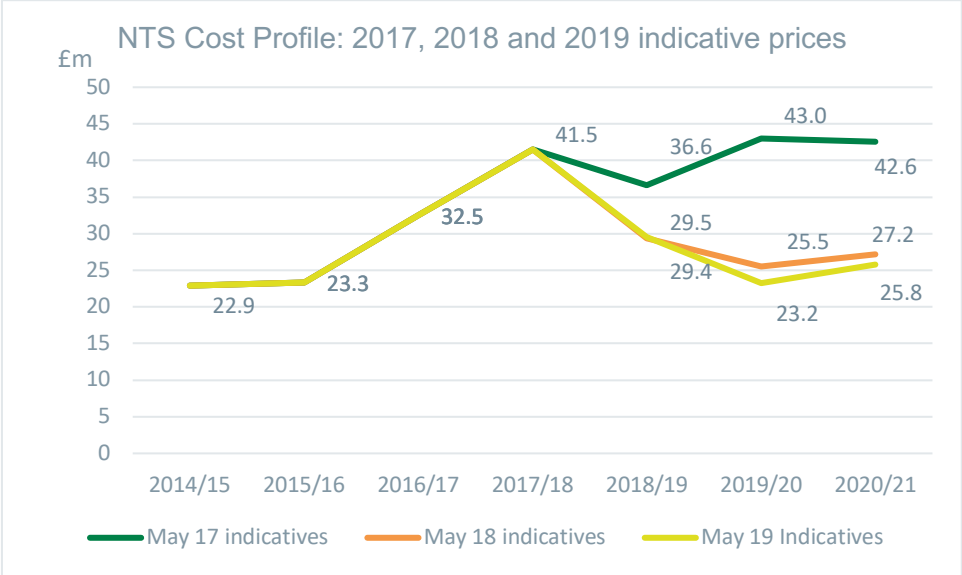
For RIIO-GD1, WWU has been faced with dramatically changing costs for NTS costs in getting gas to the offtakes. The first of these changes occurred in the October of 2016/17 however the forecasts from NTS at T-3, T-2 and T-1 had not signposted these changes. Consequently, allowances were set too low for the cost incurred which resulted in a cost true up in 2017/18 and also 2018/19.

In 2016/17 the NTS forecast going forward showed that the increase to WWU would be enduring. Therefore, in line with our licence, we requested, and Ofgem approved, an amendment to WWU's allowance reflecting NTS forecasts in T-3. This resulted in the allowance in 2018/19 and 2019/20 being increased to £41.9m and £46.5m in nominal prices respectively. The final charges levied on WWU by the NTS were much lower than previously forecast and consequently allowances for 2018/19 and 2019/20 significantly exceeded the costs to be incurred.

If WWU had done nothing then the result would have been the collection of our allowances as intended in 2018/19, and a large give back to the shippers in T+2. What WWU therefore did was adjust its prices in December 18 so as to give this money back as it was incurred, faster than our allowance intended.

For 2019/20 WWU again sought to collect a lower exit capacity revenue figure than is allowed through the current price control, to pass the benefit of significantly reduced NTS costs from 1 October 2018 onwards, back to its customers faster than would ordinarily occur through the two year true up mechanism.

The cost profile for WWU demonstrates the volatility imposed by the NTS through their charging:



From 2019 NTS pricing must comply with the EU Tariff rules. An industry modification (MOD 678) was raised by National Grid NTS in January 2019 to amend the pricing methodology in place. The main difference to the current regime being the use of capacity weighted distance basis to allocate revenues.

WWU has been engaged in this process from its outset in arriving at a solution (including following the raising of MOD 621 in July 2017, which also sought to amend the NTS pricing methodology and which was rejected by Ofgem in December 2018) that provides its ultimate customers with more stable and predictable prices than currently in place. The modification is currently awaiting decision by Ofgem.

The costs forecast above are all reflective of current published NTS forecasts made on the current regime within the UNC. Any changes which result from MOD 678 and its implementation will further compound the effect caused by a cost profile misaligned with the allowance profile for the networks.

The approval by Ofgem of MOD 678 or one of its 10 alternatives may result in significantly higher NTS Exit Capacity costs for WWU if the changes happen before the resetting of allowances for RIIO-GD2. GDNs are required to bear these cost increases for two years. In this event it is our view that GDNs should be held whole to ensure that any negative impact on cash flow and financing arrangements is minimal.

2.4 WWU Totex Outperformance

WWU remains committed to working with Ofgem, and its customers to arrive at a solution which is considered most equitable for all industry parties.

2.4.5 Theft of Gas

WWU continued to focus on identifying and investigating cases of theft of gas in 2018/19 in order to return this money to users through a lower allowed revenue charge. The net benefit to the consumer in 2018/19 was £161k.

In year prices £'000s	Gross payments received	Recovery Net of VAT	Associated Costs	Net benefit/(cost) to the consumer
2014/15	0.0	0.0	29.3	-29.3
2015/16	496.8	415.4	95.6	319.8
2016/17	857.4	754.9	124.1	630.8
2017/18	540.2	489.8	161.8	328.0
2018/19	326.8	293.1	132.4	160.6
Total	2,221.2	1,953.2	543.2	1,409.9

The number of theft of gas investigations carried out by WWU in 2018/19 has decreased to 290 from 297 in the previous year. Associated costs relate to the number of investigations undertaken. However, the overall volume and value of gas illegally consumed has decreased when compared to 2017/18 affecting the overall recovery value. Consequently, we will request a pass through for £161k which will result in a reduction to our allowances in the regulatory year 2019/20.

2.5 Innovation and the Future of Energy

2.5.1 Changing shape of the network

With more than 80% of heat and power at peak times met by the gas network in the UK, we're planning for the future – to make sure we continue to deliver reliable energy at affordable costs for customers, whilst helping the UK meet decarbonisation targets.

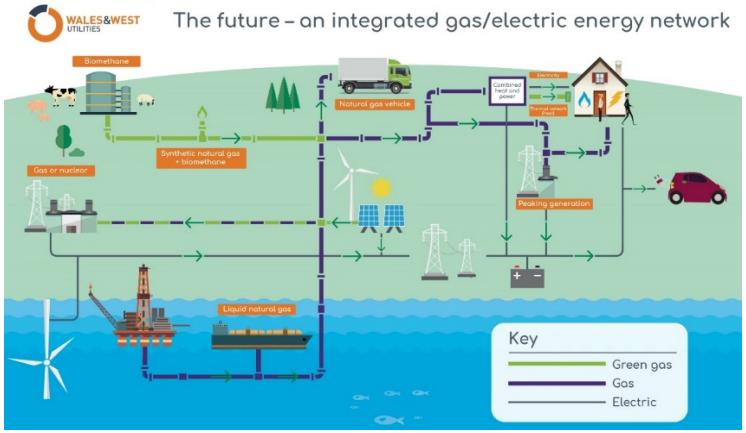
The facts

- There has been a shift change in the interaction between the gas and electricity networks – which is set to continue in the move to create a dynamic, flexible, integrated energy system to support a green energy UK.
- Gas and electricity are now increasingly intertwined at distribution level due to CHP, power generation and gas fired heat networks.
- After over 40 years of investment we now have a 72% PE network.
- More electric vehicles are charged with intermittently-generated renewables, this creates larger demand swings on the electricity network, affecting demand on the gas distribution system as gas peaking plants respond to maintain capacity on the electricity network.
- Green gas entry has expanded rapidly from concept to practical BAU over the last few years – further expansion needs investment and the right level of government incentives.
- People are starting to realise that storage is key, not just for minutes, but hours/days/months, and across seasons – gas provides this at the cheapest cost. The gas network is already a storage battery.
- Intermittent renewables continue to be supported by gas – the energy system would not work without this balance. We are starting to see the impact of this on gas demand profiles experiencing a first double breakfast peak in Wales South (WS) when peaking generation came on to meet the deficit that intermittent solar generation created.

Our response to date

- ✓ We have delivered a unique study on the benefits and issues with most heating options that exist today – The Bridgend Study. This study also looked at the willingness and ability of people to pay for changes to their existing systems.
- ✓ We've built a unique energy simulator 'Pathfinder 2050' that models future energy supply and demand – and its conclusions are clear. To make sure we have a secure supply of affordable and sustainable energy for future generations, we must continue to invest in and use the gas network. This model has generated significant interest from external parties and a number have made use of it, with support from us, to develop their own scenarios. We have information published on our website outlining the purpose and function of the model, but have already shared an early version with Regen who have used it in the project they are undertaking for the Institute of Welsh Affairs, 'Re-Energising Wales'. Other parties including Progressive and Cenex have utilised the model to assess energy needs and solutions for decentralised/low carbon energy networks. We are happy to support interest in this future use of this tool.
- ✓ We have completed a trial to test the network and customer benefits / challenges of a hybrid heat system with smart controls – Freedom Project. This work was carried out in collaboration with Passiv Systems, Western Power Distribution, Delta EE and other partners. The project has proven that through optimisation of hybrid heating systems, significant reductions can be made to CO2 emissions from domestic heating without significant investment in electricity networks and renewable generating capacity which would only add value at times of significant demand.
- ✓ We've started a project looking at proving new applications of existing technology through field trials to primarily facilitate additional green gas into the network - OptiNet. This will be achieved by 'Smarter Pressure Control' to maximise existing demand for green gas entry whilst maintaining security of supply; and compression up the pressure tiers to create additional demand. This project is supported by Passiv Systems who are the lead partner, Cadent Gas Network and Costain.
- ✓ We have been working in partnership with Regen on a Regional Future Energy Scenarios (FES) project. This work draws on whole-system thinking to better understand how our network will evolve. The project's output will provide forecasts locally, across 15 zones and 5 distinct scenarios, in order to inform network planning and support future investment decisions. The scenarios focus on the evolution of heat demand, delivery technologies and fuels, the growth of gas fired power generation and the changing gas supply mix, including the introduction of hydrogen and injection of biomethane.

We continue to pro-actively share the outcomes from our work to ensure it is visible and challengeable. We are delighted that key decision makers within BEIS and Welsh Government are engaging with us on the outcomes and usefulness of our work in their future plans.



2.5 Innovation and the Future of Energy

2.5.2 Green gas

Green Gas injection in the lower pressure tiers of the gas network has reached a level at which we will have a requirement to compress gas back up through the network, effectively operating parts of the network in reverse. Establishing compression as a workable solution has the potential to remove a number of existing barriers to entry where Green Gas suppliers want to connect to parts of the network where there is insufficient demand available to take their gas. In 2017/18 we undertook preliminary works to assess the feasibility of installing compression in the part of our network which is most constrained. We have also been considering how other options such as dynamic pressure control and storage may help meet this requirement.

Our OptiNet project as described above, will consider how these optimisation technologies will work together to provide a robust assessment and recommendation of the best approach to take.

We now have 19 green gas connections with a maximum connected capacity of 1,570 GWh/year. If all of this gas was used for efficient electricity generation it would be enough to provide heat to approx. 130,000 homes, more than three times the Swansea Bay barrage would have produced at a fraction of the cost.

2.5.3 Embedded power generation

We continue to receive enquiries for small generation plants and have connected a further five sites this year which provide an additional 110 MWh electricity output from our network. These small power stations play an important role in offering balancing services to the power networks, effectively using storage in our network to provide flexible generation to the electricity network. Power generation from the 37 power plants connected to our network is now 1.762GWh, this has decreased over the last year due to some of our legacy sites closing down. We have a further 0.27 GWh of accepted capacity that is due to connect in the near future and 0.36 GWh of potential sites listed on the Capacity Market register.

The levels of connection seen to date have not required significant investment for storage or pressure management on our Network. However, given the continued loss of coal and nuclear generation over the next few years, along with increasing power requirements for new loads such as electric vehicles and interconnectors, we are forecasting that peaking generation requirements will increase and investment on our network will become necessary in the near future. We have modelled all potential power generation loads in our area and the resulting investment required would increase significantly should all of these sites connect.

This year we have targeted specific customers in potentially constrained areas of the network to determine whether they would like to take up interruptible contracts with us. We have engaged more with these customers and marketed the annual interruption process via our website and social media. The result of this process was that no interruptible contracts were taken up.

We led a stakeholder engagement workshop entitled “Distributed Generation – Working with you” to further engage with developers, consultants and other GDNs on our processes and have developed new processes to improve our connection service to customers. We have developed analysis procedures specific to intermittent demands to help us fully understand the impact of these types of loads on our network. Future workshops to continue the discussions and collaboration on this topic are to take place during 2019/20.

2.5.4 Investing in our future

In 2018/19 we invested £1.4m (2017/18: £1.8m) on the 25 (2017/18: 22) Network Innovation Allowance (NIA) projects we undertook, which reflects an increase in project volumes and a lower average project cost – as a result of the completion of Project Freedom during this year.

Our annual “Network Innovation Allowance Activity Summary” which details how we, and our innovation partners, have used the sixth year NIA, is available on our website.

The key headlines are:

- ✓ We took part in 27 innovation projects (25 NIA and 2 NIC projects – H21 and BioSNG). Since 2013, we have completed 80 NIA projects with a total investment of £8.0m. We maintain a balanced innovation portfolio, consisting of a range of projects with 60% seeking to deliver for today’s customers and 40% exploring low cost, low carbon solutions for the future.
- ✓ To date our innovation portfolio has delivered benefits of £9.4 million (£0.8m through NIA and £8.6m self-funded innovation). We have led a range of research and demonstration projects to ensure our network is fit for the future, and that our impact on the environment is minimised.
- ✓ We are committed to rolling out previously proven innovation into our business. Our developed three-stage process maximises project potential, allowing us to report that 54% of all completed projects successfully reach a business-as-usual status.
- ✓ 18 (2017/18: 14) of these projects have been worked on collaboratively with one or more of the other Network Licensees. We were the lead GDN on nine (2017/18: five) of these collaborative projects – a marked increase from previous years.

2.5 Innovation and the Future of Energy

- ✓ We maximise our innovation activities through collaboration. We are proud that 66% of our NIA project portfolio, since 2013, has been delivered in collaboration with one or more network licensees - this sets us apart from the sector average of just 20% driving our average project cost lower than that of our GDN partners.
- ✓ We have participated in projects with over 123 unique partners - since 2013 we have nurtured relationships with over 415 organisations, businesses of all sizes and academia.
- ✓ Some examples of the NIA projects we've worked on in this regulatory year are outlined below:
  - Our collaborative three year, 'Above & Beyond' project (formerly known as 'Eye in the Sky') brings together key industry bodies, the Department for Transport through the Connected Places Catapult, the Civil Aviation Authority (CAA), and seven gas and electricity networks to explore and develop an industry standard for beyond visual line of sight drone flights to inspect critical network infrastructure pipelines and overhead lines. The project aims to improve data quality and significantly reduce costs compared to current helicopter surveys. We are at an exciting time in the project, where following CAA and stakeholder acceptance, the first flight trials have successfully been conducted on both the electricity and gas networks in segregated airspace over Lincolnshire and South Wales respectively.
  - Project REACH (Reaching Everyone And Connecting Homes) has been delivered with partners Egnida Consulting, and demonstrates a proactive and innovative approach to the identification of off gas fuel poor households. The project has produced an easy-to-use web app to assist us in our continuing commitment to provide support to tackle.
  - adopt, the projects that we want to learn more about, and the projects that have limited benefit for our network due to differences that exist, for example in our asset base or in the geography or demographics of our network area.

To date, we have assessed and trialled 94% of projects implemented by other GDN's. We have adopted seven technology solutions from other networks' NIA projects. Recent examples include SGN's Small Pressure Pot & Anaerobic Gun and Cadent's Optimal use of Quick Response (QR) Codes project.

We continue to work closely with the UK gas networks and have developed an implementation log to ensure that project learning and outputs are accessible to all networks as projects reach completion and are embedded within our respective organisations. This process allows us to quickly adopt the learning from completed innovation projects, and has been effective in enabling us to progress four innovations to field trials in 2018/19.

During the year 2018/19, we not only used media channels to share and promote our innovation project findings, we actively and thoroughly disseminated project learning at events such as the Low Carbon Networks & Innovation conference, UK AD and World Biogas Expo and Utility Week Live. Additionally, we undertake a number of project specific engagements, an example of which was our Freedom project launch event, held in the House of Commons, which was well attended by ministers, industry and academia.

2.6 Summary of Output Performance

The headline is that we continue to deliver the commitments measured annually and across all of RIIO-GD1. As we look ahead to the end of RIIO-GD1 our key concerns and challenges remain:

- Fuel Poor connections. The change to the eligibility criteria after we agreed a 20% increase to our RIIO-GD1 commitments will make achieving the additional 20% very tough.
- Secondary workload deliverables – metallic service replacements. We have been engaged with the Ofgem Cost & Output team to highlight our strategy and approach. In simple terms we are not seeing the target mix of work to deliver the numbers anticipated ahead of RIIO-GD1. We will deliver our committed Network Output Measures (NOMs) targets and will use this measure to demonstrate that the lower level of metallic services workload has been risk traded off against more efficient work.
- Interruptions targets – WWU was the only GDN which chose not to resubmit lower targets as part of the mid point review of interruptions. We are committed to our original challenging targets and intend to deliver these within RIIO-GD1 rather than weaken these targets.
- Smart Meter rollout – The supplier led programme has been delayed and we will see the mass rollout over the remaining RIIO-GD1 period and possibly into RIIO-GD2. We are engaged locally and nationally with the suppliers and will continue to play our role to support our customers.
- The development and delivery of the RIIO-GD1 close out process – we would welcome early engagement on this.

RIIO-GD2 Outputs – we have engaged with our stakeholders to ensure we commit to deliver a suite of Outputs and Outcomes that stakeholders require in RIIO-GD2

2.6.1 One Year Outputs

Primary Output	Deliverable	Units	FP target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Connections	Guaranteed Standards of-Performance		✓	✓	✓	✓	✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Environmental	Shrinkage	GWh	409	351.5	371.5	378.5	381.1	394.8	417.4

Primary Output	Deliverable	Units	FP target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Safety (emergency response)	97% Controlled gas escapes	% attended within 2 hours	≥97%	99.80%	98.60%	99.40%	99.60%	99.60%	99.49%
	97% Un-controlled gas escapes	% attended within 1 hour	≥97%	99.00%	98.00%	98.50%	98.60%	98.50%	98.30%
Safety (management of repairs)	"GS(M)R 12 hour escape repair requirement"		✓	✓	✓	✓	✓	✓	✓
	Management of repairs (Repair risk)		✓	✓	✓	✓	✓	✓	✓
Safety (major accident hazard prevention)	GS(M)R safety case acceptance by HSE		✓	✓	✓	✓	✓	✓	✓
	COMAH safety report reviewed by HSE		✓	✓	✓	✓	✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Customer service	Planned interruptions survey	Scores out of 10	8.5	8.80	8.74	8.62	8.72	8.68	8.59
	Emergency response and repair survey	Scores out of 10	9	9.56	9.53	9.55	9.55	9.44	9.14
	Connections survey	Number	8.4	9.18	9.19	9.17	8.88	9.01	8.34
	Complaints metric	Number	11.57	2.51	2.8	2.83	4.43	6.93	7.39

2.6 Summary of Output Performance

2.6.2 Forecast Eight-Year Outputs

Primary Output	Deliverable	Units	FP target	2018/19	GD1 to Date	Forecast to end of GD1
Connections	Introduce distributed gas entry standards			✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	GD1 to Date	Forecast to end of GD1
Social Obligations	Fuel poor connections 2	# connections	≥12,590	1,083	9,582	12,590
	Carbon monoxide awareness		✓	✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	GD1 to Date	Forecast to end of GD1
Environmental	Shrinkage (leakage)	GWh	≤398	332.1	332.1	321.0
	Provide biomethane connections information	Total Connected Capacity KWh	✓	✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	GD1 to Date	Forecast to end of GD1
Reliability (loss of supply)	Duration of planned supply interruptions	Million minutes	≤92	6	59	74
	Duration of unplanned supply interruption	Million minutes	≤45	3	25	35
	Number of planned supply interruptions	#	≤451,235	34,835	269,647	345,022
	Number of unplanned supply interruptions	#	≤90,169	8,775	53,045	71,828
Reliability (network capacity)	Achieving 1 in 20 obligation		✓	✓	✓	✓
Reliability (network Reliability)	Maintaining operational performance		✓	✓	✓	✓

Primary Output	Deliverable	Units	FP target	2018/19	GD1 to Date	Forecast to end of GD1
Safety (mains replacement)	Iron mains risk reduction (based on MPRS)		≥98,727	8,531	97,675	104,500
	Sub-deducts networks off-risk		✓	✓	✓	✓

2.7 Performance Against Primary Outputs

2.7.1 Connections

Exit connections

In year output	Deliverable	Section Ref	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Connections	Guaranteed standards of performance	8.1.11	✓	✓	✓	✓	✓	✓

We have once again maintained our performance of the Connections Guaranteed Standards well above the benchmark levels set by Ofgem with assurance provided by internal Quality Assurance processes and external audits under SSC D10 of our Licence.

Entry Connections

In year output	Deliverable	Section Ref	Units	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Connections	Introduce distributed gas entry standards	6.1.10	Live sites	19	18	16	12	2	1

We continue to believe in a future integrated energy network and have introduced distributed gas entry standards to support the connection of distributed Biomethane gas. We have added one site during 2018/18 and six others are in progress.

We have also connected more peaking generation plants within our network as well as another connection to supply gas for a fleet of city buses in Bristol. In total we now have three CNG fueling connections. These elements are all demonstrating that the future is already here.

Injecting green gas into the distribution network directly helps both achieve climate change targets (reducing reliance on fossil fuels) and improve security of supply. We continue to support potential and existing connections through the complex accession process to ensure a reliable, clean and safe supply of gas into our network. The spring statement announcement of further incentives and investment in green gas entry supports our business case for further growth in this area.

We now have 19 green gas connections with a maximum connected capacity of 1,585 GWh/year, with two to three further sites by 2021. If this gas was used for efficient electricity generation it would be enough to provide heat to approx. 130,000 homes.

2.7 Performance Against Primary Outputs

2.7.2 Environmental

In year output	Deliverable	Units	FP Target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Environmental	Shrinkage	GWh	409	351.5	371.5	378.5	381.1	394.8	417.4

8 year forecast	Deliverable	Units	FP Target	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Environmental	Shrinkage (leakage)	GWh	398	332.1	350.4	357.9	363.0	376.0	398.0
	Provide biomethane connections information	Total Connected capacity (KWh)	✓	129,792	123,292	108,125	86,125	35,208	5,400

Our primary impact on the environment is gas lost to atmosphere during transportation through our network.

Utilising pressure control systems and reinforcing our network we actively manage system pressures down to a minimum and therefore also minimise emissions. We invested heavily in pressure control systems in previous price controls, saturating our network where it could be justified through cost benefit analysis. This investment has significantly benefitted today's consumers.

We performed this work in advance of the other GDNs and have therefore already realised the opportunity which those other GDNs still have to further reduce emissions through installing new control systems.

Therefore, for us mains replacement is the most significant contributor to reducing emissions, delivering over 90% of the reduction in RIIO-GD1 to date. This equates to a reduction of 337,000 tonnes of carbon dioxide equivalent (CO2e) saved over RIIO-GD1 to date, and a total of 578,000 tonnes CO2e forecasted to be saved over the current pricing period. Without mains replacement we would fail to meet our emissions targets.

A further aspect of our role in the environment is in supporting wider decarbonising strategies. We now have 19 DN entry sites connected to our network, one within Wales and the remainder in the South West. These sites produce 'green gas', for use by our customers, having a direct impact on their decarbonisation without the need for expensive works within the homes.

Our support of new flexible generation plants and changes to the contracts with existing power stations means that power can be generated on a more flexible basis by power stations within our network. This is supporting the decarbonisation of the power grid by ensuring that intermittent sources can be accommodated with no risk to the reliability of those networks.

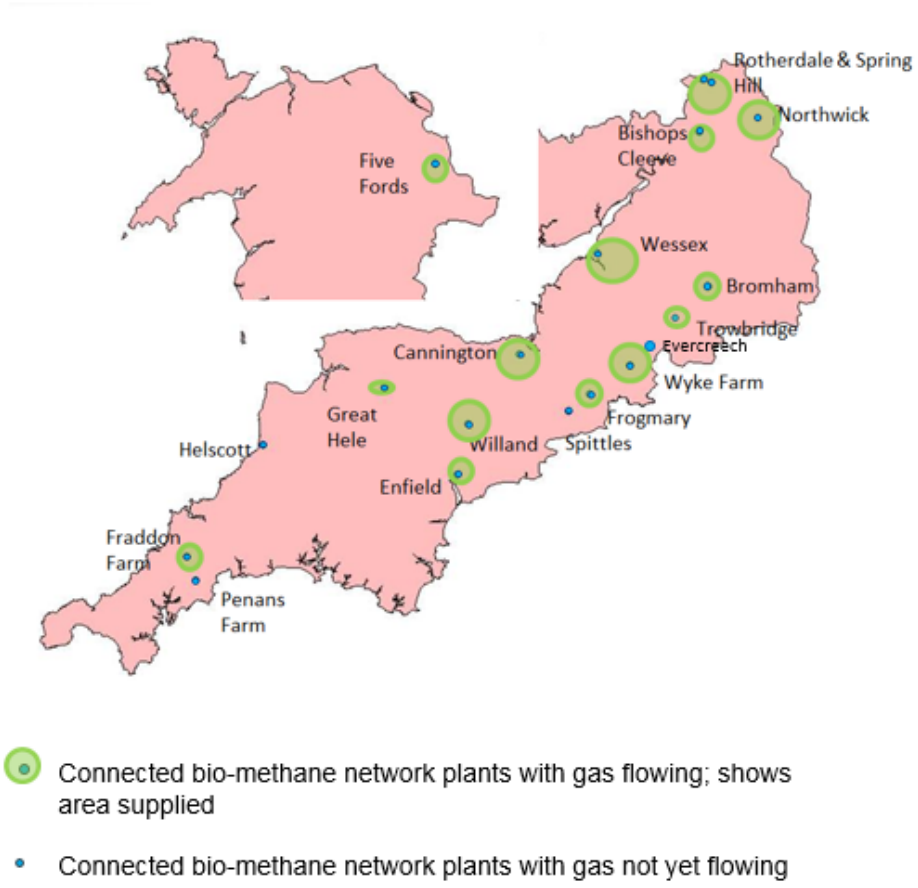
We are also proud of our environmental achievements and again maintained certification to ISO 14001 environmental management. By utilising and developing industry-wide best practices, we have reduced our environmental impact. Key areas of focus have been climate change, the reduction in disposal of waste to landfill and the use of quarried stone. Protecting the environment is a key focus for us going forward, and we are constantly looking for ways to minimise the environmental impact of our past, present and future activities.

These sites have the capacity to supply over 130,000 domestic homes with heat, a contributor towards the Government's 2020 renewable heat targets.

Uncertainty on future biomethane connections has been introduced by the changes to the Renewable Heat Incentive (RHI) scheme for future plants. However, we continue to work with potential connectees to support and encourage this growth which we believe is a positive development in the future viability of the energy network.

2.7 Performance Against Primary Outputs

Figure 1 showing location and relative size of connected sites within our region



2.7.3 Social

8-year forecast	Deliverable	Section Ref	Units	FP Target	GD1 to date	Forecast to end of GD1
Social obligations	Fuel Poor Connections	8.1.9	No.	12,590	9,582	12,590
	Carbon Monoxide awareness	8.1.10	Increase awareness	✓	✓	✓

Vulnerable Customers

We are fully committed to supporting the most vulnerable and fuel poor across our geography. Our core duties are to identify people in vulnerable situations who could be impacted by our works by using the Priority Service Register. We take our obligations to provide alternative heating and cooking and free alterations very seriously, and have invested in nine Customer Support Officers to be the key contacts for customers during our major works.

We also deliver many services which have been developed working with stakeholders and third parties over the last 3 years. We are currently working with partners including:

Partnership	Delivery of services
Warm Wales	Community Energy Champion project – income maximisation, energy bills and debt, energy efficiency advice and measures, safeguarding, PSR and CO
Care & Repair (Cymru and some SW England)	PSR sign ups and CO monitors to over 65s
Fire & Rescue Services (6 of 7 agencies)	PSR sign ups and CO monitors to vulnerable households
CSE, Bristol	Referrals from our engineers of vulnerable households for financial, tariff and energy advice
Warm Wales, Flintshire Council, NEST team, QERB and City Energy	Ofgem approved fuel poor partners

2.7 Performance Against Primary Outputs

Fuel Poor Connections

We completed 993 fuel poor scheme funded connections in 2018/19 and funded 90 connections made by a third party Utility Infrastructure Provider (UIP) where we have adopted the assets. The 2018/19 total of 1,083 is up slightly on the 1,051 connections in 2017/18. A further 3,008 fuel poor scheme connections are required over the remaining two years of RIIO-GD1 to achieve our regulatory output target.

We remain optimistic of meeting our Output target of 12,590 connections. We are working with seven organisations who have obtained funding from the National Grid Warm Homes fund in our network with phasing putting most of this work (1,500 connections) in the last two years of RIIO-GD1. We also have a forecast of another 200 UIP funded connections over the next two years.

The Welsh Government NEST scheme continues to connect over 100 homes per annum and we forecast 200-300 in the next two years, and the Arbed Phase 3 (Community Energy scheme) which commenced in late 2019 is looking to connect homes to gas through mains extensions schemes and connection on live infill schemes, and offering the potential for 1,000 connections.

Carbon Monoxide awareness

Stakeholders continually place raising the awareness of carbon monoxide (CO) as a high priority for our business. Feedback from a range of stakeholders said we should make sure we target CO awareness and alarm installation to those most at risk. As a result, last year:

- More than 4,800 CO alarms were distributed
- 2,800 (58%) CO alarms were directly installed by our partners in homes of the most vulnerable in our society as soon as they identified a vulnerability
- 98% of our CO alarms went to those most affected, compared to 96% during 2018/19

We also rolled out the Safety Seymour initiative from Cadent in 2018, targeted at Year 2 pupils, and through our 15 Gas Safety Ambassadors delivered the programme at 22 schools reaching more than 1,400 children in 2018/19.

In early 2017 we developed a new online CO safety initiative in the form of an online game, called 'Crack the COde' (http://www.wwutilities.co.uk/crack-the-code/). More than 159 people 'Cracked the COde' during 2018/19 and we've followed this with three short animated films, targeting people at specific and relevant times of the year – such as holiday season when people are camping and using BBQs – to help spread awareness. These animations have been viewed more than 300,000 times.

We jointly ran the CO Schools safety competition in 2018 with over 200 entries. The 2019 competition has seen 630 entries. Our KS2 entry for the south west has received the national prize. We've had a national winner for three years running.

Community Energy Champions

Following the success of our Fuel Poor Reduction Hubs in 2016/17, and to support the shift in stakeholder focus to prioritise people in vulnerable situations (regional workshops and CFP members), we launched the Community Energy Champions (CEC) project in partnership with our fuel poor partner, Warm Wales in 2017/18.

CECs offer a range of advice on debt and benefit, home and personal safety, tariff switching, energy efficiency and health and wellbeing. They identify 'hard-to-reach' vulnerable and fuel-poor households through Foundation Data for Robust Energy Strategies (Fresh) mapping, which layers data on poor health, poverty, poor housing and over-65s so we know where we need to focus our resources. By working closely with health professional, we are seeing an increasing number of referrals of individuals into this scheme.

We've targeted three different approaches in south Wales, north Wales and Cornwall, working with key support services in local authorities and helping lift people out of fuel poverty in ways other than simply providing a gas connection. The outcomes for 2018/19 were as follows.

Area	Savings	Total no. households assisted	Average saving per household
Cornwall	£224,826	277	£812
North Wales	£356,732	321	£2,032
Severn Wye	£279	4	£70
South Wales	£284,540	546	£520
	£866,377	**1,148**	**£755**

The reasons for the big differences between North Wales and Severn Wye are due to:-

North wales is well established and we have been able to access some significant funding for energy efficiency measures in that area. We have for example been able to link customers up with £200k of Warm Homes Fund money for energy efficiency measures that Flintshire Council had available.

2.7 Performance Against Primary Outputs

The Severn Wye relationship reflected just four customers been helped at the end of March. This had grown to 30 customers and an average of £200 by the end of May but the relationship is currently under review for that area due to a lack of local authority support.

This programme of work was recognised at the Discretionary Reward Scheme 2018 panel with a reward of £150k based upon the initial results. Given the success of this programme we will be continuing this in 2019/20 with funding also coming from the National Grid Warm Homes fund, and we propose a programme of works based upon this in our business plan RIIO-GD2.

Increasing access to Priority Services Register (PSR) support

Stakeholders have told us that the PSR is vital to ensure we can proactively identify vulnerable customers and safeguard them during our works. A report we commissioned by Mindset highlighted the lack of knowledge of the PSR by individuals, carers and health workers. We have been focusing our partners on signing up individuals, and in addition have attended Occupational Health worker conferences across our network to spread the word about the PSR for gas, and other utilities to encourage them to sign people up, and whilst also ensuring we share our data with water and electricity companies as well as the gas suppliers.

As a result, we signed up 4,227 people in 2018/19, which was an increase of 20% on the 3,500 in 2017/18.

We have plans to run social media campaigns in 2019/20 to further increase our reach and the number of sign-ups.

2.7.4 Customer

In year output	Deliverable	Section Ref	Units	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Customer Service	Planned work survey	7.3.5	Score of out of ten	8.80	8.74	8.62	8.72	8.68	8.59
	Emergency response repair survey	8.1.8	Score of out of ten	9.56	9.53	9.55	9.55	9.44	9.14
	Connection survey	8.1.8	Score of out of ten	9.18	9.19	9.17	8.88	9.01	8.34
	Overall score		Score of out of ten	9.18	9.15	9.11	9.05	9.04	8.69
	Complaints metric	8.1.8	#	2.51	2.8	2.83	4.43	6.93	7.39
	Stakeholder engagement	8.1.8	Metric score	5.43	5.00	6.00	6.05	7.05	6.30

Customer Satisfaction

We scored 9.18/10 for overall customer satisfaction this year in the Ofgem surveys. This is an improvement on the 9.15 scored in 2017/18. Planned work saw the biggest improvement in scores. This is largely attributed to acting on customer feedback from focus groups and the impact of the Customer Support Officers (CSO) we started to deploy in early 2018 to improve communication with customers before, during and after our works. We now have nine CSOs located around the network. CSOs visit homes and businesses to talk to customers before projects start and find out about vulnerabilities and potential problems, such as holidays. They're on site while we're working and follow up with customers once we've completed. As a result, queries have reduced by 35% and complaints by 20%. Focus on the impact of team working practices has also assisted on reducing interruption times.

2.7 Performance Against Primary Outputs

Our overall complaint handling score is 2.51 this year compared to 2.8 last year (the lower the better as Ofgem's target is <11.57). Our complaints resolution improved during the year, 84% of complaints were resolved within 24 hours of receiving them a 1% increase on 2017/18. Overall complaints were 1,515 on 260,000 customer interruptions. This continues the decline in the volume of complaints from 2,519 complaints in 2013/14.

Stakeholders told us we should continue to benchmark ourselves against organisations outside our industry. We have continued to have our customer service independently evaluated by the Institute of Customer Service (ICS), which awarded us its ServiceMark again in 2019 for meeting its demanding national customer service standard. Access to their research and the network of other companies who are ICS members is helping us to understand how customers' needs may change over the next 10 years to build this into our business plans. We achieved a customer satisfaction score of 93.6, for our whole business, considerably higher than the utility sector benchmark of 73.3 and the all-sector benchmark score of 77.4.

We gained the British Standard for Inclusive Service Provision (BS 18477) in 2016/17 and, thanks to work we've done and initiatives we've introduced and evolved since, such as our Customer Support Officers, the standard has been verified again. We're the first gas network to gain this accreditation. Our whole business was audited, not just our Customer Service team, confirming our processes and practices are evolving to maintain the highest standards.

Interruptions.

Our average planned interruption time for 2018/19 was 171 minutes compared to 152 minutes in 2017/18. We achieved a 97% performance in getting customers reconnected within 24 hours, and ensured we safeguarded any who were off gas for a longer period.

Our performance in unplanned interruption times is equally good. In 2018/19, our average interruption time was 356 minutes compared to 358 minutes in 2017/18. These times represent significantly shorter periods without gas, benefiting the customer and their overall satisfaction with WWU as a customer focussed business.

2.7.5 Reliability

8 year forecast	Deliverable	Section ref	Units	8 year FP target	8 year forecast
Reliability	Duration of planned supply interruptions	7.3.5	Millions of minutes	≤92	74.39
	Duration of unplanned interruptions	8.1.6	Millions of minutes	≤45	34.88
	Number of planned supply interruptions	7.3.5	#	≤451,235	354,022
	Number of unplanned supply interruptions	8.1.6	#	≤90,169	71,828
Reliability (network capacity)	Achieving 1 in 20 obligation	6.1.4	Capacity booked	✓	✓
Reliability (network reliability)	Maintaining operational performance	6.1	To maintain	✓	✓

The Ofgem Mid Point Review of interruptions targets concluded in 2017/18 with Cadent, NGN & SGN having targets reset to a lower number. WWU was the only GDN which chose not to resubmit targets as part of the Mid Point Review of interruptions. We are committed to our original challenging targets and intend to deliver these within RIIO-GD1 rather than weaken these targets.

We continue to use live insertion where appropriate which minimises disruption by being able to undertake work without isolating supplies and therefore keeping the consumer "on gas" for longer (as it only requires one interruption whereas other techniques require two). We have sought to share this practice with the other gas networks to help identify if other networks could utilise this technique further which we continue to see as a key success in the way we manage our Repex programme.

The 2017/18 winter saw severe weather conditions for a period of four days. This placed the network under significant stress for a short period of time with such conditions not seen since the winter of 2010/11. The high demand and extreme temperatures coupled with very heavy snowfall which was concentrated in our network tested both the network in terms of supply and our winter preparedness in terms of staff response. All gas demands were met and despite the significant disruption Repair and Emergency standards were achieved for the 2017/18 period, validating the pre-planning that had taken place.

2.7 Performance Against Primary Outputs

2.7.6 Safety

In year output	Deliverable	Ref	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14
Safety (management of repairs)	GSMR 12 hour escape repair equipment	8.1.4	✓	✓	✓	✓	✓	✓
	Management of repairs (repair risk)	8.1.4	✓	✓	✓	✓	✓	✓
Safety (major accident hazard prevention)	GS(M)R Safety case acceptance by HSE	6.1.1	✓	✓	✓	✓	✓	✓
	COMAH safety report reviewed by HSE	6.1.1	✓	✓	✓	✓	✓	✓
Safety (emergency response)	97% Controlled gas escapes attended inn 1 hour		✓	✓	✓	✓	✓	✓
	97% Uncontrolled gas escapes attended in 1 hour		✓	✓	✓	✓	✓	✓

8 year forecast	Deliverable	Section Ref	Units	2018/19	2017/18	2016/17	2015/16	2014/15	2013/14	8 year forecast
Reliability (network capacity)	Achieving 1 in 20 obligation	6.1.4	Capacity booked	✓	✓	✓	✓	✓	✓	✓
Reliability (network reliability)	Maintaining operational performance	6.1	-	✓	✓	✓	✓	✓	✓	✓
Safety (mains replacement)	Iron mains risk reduction (based on MPRS)	7.3.1	Risk reduction	✓	✓	✓	✓	✓	✓	✓
	Sub deducts networks off risk	8.2.4	#	✓	✓	✓	✓	✓	✓	✓

We continue to make sure colleague and stakeholder safety remains top of our agenda, and that we have rigorous safety systems and processes and a commitment to continuously improve our record.

Royal Society for the Prevention of Accidents (RoSPA)

As may be expected of a company like ours, safety is, of course, our number one priority. The RoSPA Awards are among the most prestigious in the sphere of health and safety.

We were awarded the RoSPA Gold Award for our health and safety performance again in 2019; this is our sixth such award in a row. No other UK gas network has achieved this and we are immensely proud of the success. This message of safety achievement is a welcome reassurance to the people, organisations and interest groups who rely on us for a high quality and very safe service.We also won the RoSPA Oil and Gas Sector Award and, as we were in the top three across all sectors, we were automatically finalists for the ultimate safety award across all sectors – the Sir George Earle Trophy finishing in the top three.

New International Standard ISO 45001 - Occupational Health and Safety Management Systems - WWU was certified to OHSAS 18001 which is to be superseded by a new international standard ISO 45001 over the next three years. Following the latest inspection conducted by the accrediting organisation SGS in September 2018 WWU is delighted to be fully certificated to the newer and more stringent standard - this is an excellent success story and will place WWU at the forefront of businesses looking to make this accreditation upgrade. WWU is the first GDN to achieve this accreditation.

Keeping people safe

We have robust systems to deal with a major loss of gas supply, understanding our stakeholders want to see us reviewing and testing those systems regularly. Work continued though 2018/19 to further develop WWU's internal response. We held workshops to develop a solution to capture data in the field from both WWU and non-WWU engineers on the status of the gas supply for our customers and people in vulnerable situations during a Local Gas Supply Emergency (LGSE) and to produce reporting to facilitate the effective management and communication by WWU of a LGSE. This was tested during WWU's own internal and national exercises and best practice was shared among the other GDNs at industry forums.

We continue to support the wider industry by commissioning a review of the self-isolation and restoration cold weather model to update the risks associated with customer self-isolation and restoration during a gas outage. The output from this review was presented to the Health and Safety Executive with proposals to further improve WWU's response to our customers in the event of a large scale supply emergency.

3

Totex Cost Summary

In this section:

3.0 Totex cost summary

Introduction

In delivering the Outputs and innovation described within this document we have incurred the costs set out in this section.

The current RRP tables detail RIIO-GD1 actual expenditure into separate Opex, Repex and Capex categories. Outputs delivered are generally specified on separate RRP tables with no, or limited, linkage to the associated cost information.

Section 5 provides the analysis of our Totex spend by asset class/output, which in our view provides a more informative understanding of costs incurred.

As an illustration of this point, the Ofgem analysis identifies a "Capex" underspend of £5.0m for LTS and storage in 2018/19. We review the best means of maintaining the health of our infrastructure assets and consequently we have identified that the cheapest whole life solution is to perform less Capex and more Opex work, and have carried out £3.2m of "Opex" interventions specifically related to this asset category.

To properly understand our approach, and the associated cost, of maintaining the integrity of the infrastructure asset for which we are responsible, it is appropriate to review spend by asset category on a Totex basis.

In summary, without the full Totex cost analysis linked to Outputs, the headline cost variances, and hence comparisons of network performance, can be quite misleading.

Within this section we provide a high level cost analysis using the traditional Opex, Repex and Capex basis. This includes both current year and cumulative price control to date analysis.

We continue to encourage Ofgem to move to full Totex reporting, linked to specific Outputs and asset intervention activity, to facilitate a better understanding of the decisions we make to maximise intervention benefits and therefore return for our stakeholders; and in particular the trade-offs between the types of spend considered.

Unless stated to the contrary, all financial values within this report are stated in 2018/19 prices.

The summary position of actual expenditure against allowances is set out below:

		2018/19			RIIO-GD1 to date		
£m 2018/19; Prices	Section	Actual	Allowance	Variance Fav/ (adv)	Actual	Allowance	Variance Fav/ (adv)
Controllable Opex	3.2	83.9	109.3	25.4	550.3	661.3	111.0
Repex	3.3	77.9	104.1	26.2	480.5	622.7	142.2
Capex	3.4	55.1	59.4	4.3	316.2	393.8	77.6
Totex (excluding Pass through and Shrinkage)		**216.9**	**272.8**	**55.9**	**1,347.0**	**1,677.8**	**330.8**
Innovation costs	2.5.4	1.5	0.0	(1.5)	8.9	0.0	(8.9)
Pension Deficit payment	9.2.2	0.0	10.1	10.1	79.7	56.9	(22.8)
Pension admin and PPF	9.2.4	1.0	1.0	0.0	6.5	6.3	(0.2)
Total Controllable spend		**219.4**	**283.9**	**64.5**	**1,442.1**	**1,741.0**	**298.9**

No allowance/recovery of cost included for Innovation which is 90% funded by the customer through an adjustment to the maximum allowed revenue. In order to efficiently deliver the RIIO-GD1 Outputs within a Totex regime, we manage the business by asset class and output delivery rather than by type of spend.

3.1 Governance Structure

In January 2013 we implemented an updated governance structure. We operate under four committees that focus on specific operational areas of our business. Attendees at each of the four committees are from a number of different departments and across management levels.

All four committees feed into our executive committee to ensure effective overall delivery.

The four committees and a brief overview of their responsibilities are:

- Network Management – pro-active delivery of asset health across all asset categories utilising a range of timely interventions,
- Replacement – delivers the key iron mains safety risk reduction targets. Attendees include representatives from our alliance partner Morrison and Wales & West Utilities,
- Emergency and Repair – manages the reactive work required to deliver an efficient and effective emergency service and also ensure appropriate repairs to our network assets, together with connections and reinforcement; work driven by customer requests, and
- Business Operations – responsible for all other areas of Opex and Capex, notably, work management, back office (including IT, Fleet and Property) and Xoserve.

Sub-committees and Interfaces – we have a number of sub-committees and interfaces that focus specifically on key areas such as customer service, innovation and stakeholder to name a few.

The rest of this section provides some high level narrative of our Totex performance during the sixth year of RIIO-GD1 on the "traditional basis" to allow comparisons to the Final Proposals. It also shows the cumulative position against the allowances for the control period to date.

Sections 6 ~ 9 of this report provide a more detailed analysis broken out by the four Wales & West Utilities committees we use to manage our gas infrastructure and ensure regulatory compliance.

Continuous improvement– we continue to look at the way we operate the business and how we could make it more efficient. Utilising our staff and resources across activities and departments is a key focus area. Following trials conducted towards the start of the price control some key results that have been embedded are:

- Use of a single manager to effectively manage the Mains Replacement programmes in North Wales allowing for the delivery to be more effective and efficient.
- An element of the emergency workforce is now competent to support network maintenance activities which increase the productivity of the workforce and allow us to meet the maintenance workload demands.
- Network services have resources trained in key areas across the network to assist with the demand on the emergency workforce through peak workload periods. This also allows for further support on emergency activities while Smart Metering workload is completed.

The training of network services resources to assist our emergency department became a reality in the winter of 2017/18 when the "Beast from the East" was upon us enabling us to draw on the additional trained resources to ensure standards and the reliability of the gas supplies were maintained throughout the period.

3.2 Controllable Opex

£m 2018/19 Prices	Link to Committee structure	2018/19 Actual	2018/19 Allowance	2018/19 Variance Fav/(adv)	RIIO-GD1 to date Actual	RIIO-GD1 to date Allowance	RIIO-GD1 to date Variance Fav/(adv)
Work management	9.1.1	18.7	22.9	4.2	119.7	138.5	18.8
Emergency	8.2.1	9.1	17.4	8.3	61.8	104.3	42.5
Repair	8.2.2	8.7	14	5.3	58.3	87.1	28.8
Maintenance	6.2.17	17.5	14.3	(3.3)	106.5	84.6	(21.9)
Other direct activities (exc Xoserve)	9.1.2	3.1	2.6	(0.5)	21.9	14.1	(7.8)
Voluntary severance & other staff management	9.1.3	0.0	0.0	0.0	18.6	0.0	(18.6)
Xoserve	9.1.4	2.5	3.0	0.5	23.5	30.8	7.3
Holder demolition	6.2.16	0.0	0.6	0.6	3.1	3.5	0.4
Land remediation	6.1.12	0.2	2.8	2.6	8.6	13.3	4.7
Business support	9.1.5	19.7	26.3	6.7	109.8	154.2	44.4
Training & apprentices	9.1.10	4.4	5.0	0.6	18.5	28.6	10.1
Sub-deducts	8.2.4	0.0	0.4	0.4	0.0	2.4	2.4
Total Controllable Opex		**83.9**	**109.3**	**25.4**	**550.3**	**661.3**	**111.0**

Controllable Opex increased year on year by £3.7m, in constant prices. We underspent the allowance by £25.4m in the year.

The increase in cost year on year is predominately explained by the accrual releases in 2017/18 relating to periods pre RIIO-GD1.

The outperformance against allowance was partly achieved by ongoing savings as a result of:

- The introduction of Working Time Solutions in December 2012 to our operational workforce, which has optimised working patterns and reduced the ongoing overtime bill.
- Continued significant changes to reactive leakage workload as a result of the continuing unseasonably warm weather, with reduced external materials, reinstatement costs and direct labour time, allowing us to utilise industrials on more planned work whilst also reducing unproductive time.
- Utilisation of FCO's - Training all of our first call operatives (FCOs) to carry out Smart Metering Non Formula work transferred FCO labour time from our base emergency costs along with the utilisation of FCO's on replacement and capital activities providing lower costs for our customers.
- Settlement of property charges with National Grid property followed successful negotiations resulted a released accrual of £0.7m in the year.

3.3 Repex

£m 2018/19 Prices	2018/19 Actual	2018/19 Allowance	2018/19 Variance Fav/(adv)	RIIO-GD1 to date Actual	RIIO-GD1 to date Allowance	RIIO-GD1 to date Variance Fav/(adv)
Mains replacement programme	69.1	97	27.9	425.2	577.3	152.1
Multi-occupancy buildings	1.8	0.4	(1.4)	12.1	3.5	(8.6)
Sub-deducts	0.0	0.4	0.4	0	2.4	2.3
Relay following escape	7.0	6.3	(0.7)	43.2	39.5	(3.6)
Repex	**77.9**	**104.1**	**26.2**	**480.5**	**622.7**	**142.2**

We had a successful sixth year of RIIO-GD1, building on our performance in the first five years, in the management of our mains and services population. We delivered on our promises whilst driving efficiency and thus benefiting consumers. We aim to continue to deliver our stakeholder driven outputs through effective decision making, innovation and a focus on efficiency.

We have significantly driven down mains replacement delivery costs in the six years of RIIO-GD1 through a number of innovations, some of which enable enduring efficiencies, others sustainable only in the short term. In 2018/19 the cost incurred for Repex activities was £77.9m against an allowance of £104.1m.

The main reason for our outperformance in GD1 has been the favourable alliance contract that we secured. The following factors enabled us to achieve a low contract price and beneficial contract rates:

- A long price control period: In 2013 we were able to enter into an eight-year alliance contract, which was only possible because of the eight-year RIIO price control period. This provided our alliance partners certainty about workloads over a longer period; it also allowed us more of an opportunity to negotiate and to lock in a lower contract cost.
- More flexible pipe selection criteria: Greater flexibility provided a short-term opportunity to design schemes that were significantly larger than had been possible previously. This was reflected in the rates we were charged, and allowed us to benefit from the following:
- Using larger teams in smaller geographical areas – the success of the five/six-person team model during the first half of GD1 improved operational efficiency and produced a level of performance beyond our forecasts.
- More efficient support functions – larger teams delivering larger quantities of work in a small geographical area can be serviced more easily by support functions. For instance, logistics support functions have fewer projects to service and there is less travel time between sites. Reinstatement teams can also have a higher number of excavation pits in one geographical location.
- Lower mobilisation/demobilisation costs – larger and fewer schemes reduce the significant cost of safe mobilisation and demobilisation of sites. In the remainder of GD1 scheme sizes will fall as will team sizes, whilst the number of schemes will increase – with a resulting impact on our cost base.
- Lower management to team ratio – operational and safety management are most efficient when team sizes are maximised and the number of schemes that are in progress are kept to a minimum. The change in the design constraint allowed us to achieve this balance. Now these schemes have been depleted we are seeing a fall in the size of our teams with a related increase in scheme numbers – moving back to a similar profile as in GDPCR1.
- A favourable labour market: Our mains replacement programme benefited from a reliable and consistent workforce for several years before contract negotiations; the labour rates in our fixed contractual pricing reflected this. In the past few years, however, this landscape has changed significantly, and labour rates are continuing to increase. This is being driven predominantly by competition with other GDNs and other capital programmes (including in the water, electricity, nuclear, telecoms and transport sectors). This is explored further in section 5.

As a result of securing a favourable Alliance contract, our business and our customers continue to be protected from adverse market conditions and to benefit directly from our commercial arrangements.

However, this will not be sustainable once the contract expires at the end of GD1, the other contributing factors above will not continue in the remainder of GD1 and into GD2.

During the year, we continued to experience significant turnover of contractor resource (41% across the network in 2018/19) due to other GDNs offering above market rate deals to our workforce to enable them to recover their Repex programmes. This has resulted in disruption to our programme, particularly in North Wales and Plymouth and has the potential to impact delivery within RIIO-GD2.

To reduce the influence of other GDNs on our performance in the coming years, we continue to accelerate our apprenticeship and management trainee programmes.

We are mitigating this risk through implementation of a Resource Strategy introduced during 2018/19 to recruit graduates and apprentices and by more general upskilling of the current workforce for supervisor and technician roles. We have worked hard to apply an innovative approach to the management of our workforce to ensure delivery of our mains replacement programme while planning for succession into the future. This includes recruiting 150 new employees across the network to sustain and increase our delivery capacity, including more than 40 new employees in the Cornwall area to deliver our large programme of work in that county.

3.3 Repex

We are continuing to experience adverse cost pressures as previously reported:

- Going forward, the opportunity to design larger mains replacement projects will be exhausted, we will see project sizes reduce significantly and the number of main to main connections we will undertake will be higher on a "per metre" basis. Consequently we expect lower outputs from our delivery teams and more frequent mobilisation and demobilisation of projects. Aligned with this we expect a reversal of the cost reductions made in support services such as grab lorries, pick-up trucks and reinstatement costs.
- Remuneration demands from the resources we have managed to retain, are growing against a background of increases in RPI. The ramp up of the smart-meter programme is also creating a pull on our skilled resource.

For the remainder of RIIO-GD1, we will deliver a mains replacement programme consisting of more 8" mains and Tier 2 mains, resulting in the abandonment profile consistent with that included in our RIIO-GD1 Business Plan and subsequently the Final Proposals.

Our Alliance partners are incentivised by a KPI suite which includes financial risk and reward mirroring our regulatory commitments. These include, but are not limited to:

- Primary Output – level of Risk Removed;
- Total Mains Replacement length;
- Completion of 8" mains abandonment within Tier 1 programme; and
- Completion of Tier 2 and Tier 3 mains abandonment.

3.3.1 Metallic service replacement

Our approach to management of services provides an appropriate balance of risk and cost benefit analysis (CBA) and is as follows;

- Replacing all steel services when the parent main is replaced,
- Delivering a bulk service replacement programme based on a 'hotspot' analysis of metallic service failures,
- Replacing steel services when they are found to be leaking or have visible condition issues that indicate a high probability of failure, and
- Cutting off services found to be no longer in use.

This approach to the management of services is supported by the HSE and, with the exception of the detailed hotspot calculation, is consistent across GDNs.

The table below shows the number of services forecast to be intervened on in GD1 vs the Final Proposal numbers.

	RIIO-GD1 forecast	FP Allowance	Variance
Metallic (Relays)	169,980	210,329	(40,349)
PE (Transfers)	134,216	132,102	2,114
Total services worked on	**304,196**	**342,431**	**(38,235)**

There is no financial betterment to us through the change of ratio of transfers to relays. Whilst relays are more expensive than transfers the difference is marginal with excavations, time on job and overhead being very similar for both types of work.

In making decisions about where to direct our investment we must balance safety, ongoing operating expenditure, environmental impacts, and the relative efficiency of delivery. As we have previously outlined to Ofgem, we select projects that deliver the greatest benefit to customers. This process has resulted in a shortfall in the number of metallic services we have relayed, when compared with our Final Proposal targets.

We agreed with Ofgem that we would continue to focus our resources on reducing and managing risk in the most efficient way. For example, our Multi-Occupancy Buildings (MOBs) programme goes far beyond the Final Proposal allowances.

3.4 Capex

£m 2018/19 Prices	Section	2018/19 Actual	2018/19 Allowance	2018/19 Variance Fav/(adv)	RIIO-GD1 to date Actual	RIIO-GD1 to date Allowance	RIIO-GD1 to date Variance Fav/(adv)
LTS & storage	6.2.1	9.6	14.6	5.0	56.1	97.7	41.5
Mains reinforcement	8.2.5	5.6	10.3	4.7	26	61.9	35.9
Governors	6.2.10	1.3	3.8	2.5	11.4	20.5	9.0
Connections	8.2.12	12.6	11.4	(1.2)	72.4	67.3	(5.0)
IT	9.1.6	9.2	7.4	(1.8)	47.3	39.6	(7.7)
Xoserve	9.1.4	0.3	(0.4)	(0.7)	8.8	6.4	(2.4)
Vehicles	9.1.11	7.4	2.9	(4.5)	31.0	33.7	2.7
Other Capex	9.1	9.1	9.4	0.3	63.2	66.7	3.6
Capex		55.1	59.4	4.3	316.2	393.8	77.6

The following sections briefly outline the key drivers to the variances against the allowances.

3.4.1 LTS and Storage

The lower than allowed spend is a result of the following key points:

- Effective Totex intervention decisions to undertake an increased level of non-routine Opex refurbishment, a total for 2018/19 of £2.7m, contributing towards the £5.0m underspend on LTS Capex.
- By continuing to utilise an innovative solution for nitrogen sleeve end-seal replacement (rather than wholesale relay) we have now realised a six year cost efficiency giving a lower whole life cost to the end user whilst still delivering network capacity and reliability Outputs. We completed refurbishment of a further two nitrogen sleeves in 2018/19 and to date have restored the integrity of 24 sleeves in total.
- Further reductions against anticipated spend can be attributed to an alternative approach to maintaining the integrity of our pipeline network, in that we continue to implement an "As Low As Reasonably Practicable" (ALARP) methodology in assessing options available to us to identify the most cost effective method of minimising the societal risk associated with pipelines, specifically targeting high consequence areas.

To manage pipelines in this way requires high quality data and analytics. As reported last year, to support this we have re-digitised our entire high pressure pipe network (2,360km) into short sections to better assess consequence of failure. This has enabled very detailed assessment of risk for each of the 10,785 pipeline sectors, taking into account people, property and infrastructure in the vicinity of each pipeline section.

This will achieve the greatest risk reduction for the minimum expenditure in preference to wholesale replacement of pipelines.

3.4.2 Mains reinforcement

As we continue to see growth in housing, WWU has seen the growth in reinforcement of the network. This is mainly from the domestic market but we have also experienced not just a large number of requests for peaking generation sites but also several examples of reinforcement required due to these types of connections being made. Although we aim to reduce the need for expensive open cut reinforcement solutions we have seen a marked increase in the length of network reinforcement required. We have used a number of innovative solutions, including; renegotiation of agreed pressures on the network, replacement of iron and steel to allow network pressure elevation and combining design and delivery to ensure the cheapest cost options are put forward.

3.4.3 Governors

The £2.5m lower Capex spend than the allowance of £3.8m in 2018/19 is the result of our effective strategy of an increased level of refurbishment resulting in a lower Totex cost whilst delivering the same reliability output illustrated by overall average health and risk. It is worth noting, we have spent £1.0m of non-routine Opex for the 2018/19 year.

The district governor intervention plan for 2018/19 resulted in wholesale capital replacement of 4 governors, a further 6 have been purchased ready for installation in 2019/20 and we've completed Capex refurbishment of a further 37 governors. This has been driven by their Health and Risk indices as determined from the Condition Based Risk Management (CBRM) model and also taking account of the recently developed Monetised Risk models (e.g.NARMs).

The net effect on the average overall Health Index of the district governor population previously reported is a slight deterioration from 2017/18 to 2018/19 and a marginal increase in overall Risk Index over the same period - this is in line with the committed Outputs for this asset group for this price control.

We remain on target to deliver our Outputs over the RIIO-GD1 period as reported against the common NOMs methodology.

3.4.4 Connections

The net Capex for Connections in 2018/19 was £12.6m, which is £1.2m higher than the allowance. The increase in cost is due to a change in the mix of workload delivered. Further detail is contained within Section 8.2 Connections.

3.4.5 Other Capex

Spend in the year was £0.3m lower than the allowance of £9.4m. The physical security upgrade project (PSUP) project is also included under 'other Capex' and this project has now been largely completed with minimal spend in 2018/19. The details of actual expenditure for the Other Capex categories are covered within the commentary for the Business Operation Committee.

3.4 Capex

3.4.6 Cost pressures

We continue to face external cost pressures; both in terms of availability and cost of the skilled workforce and the materials, products and services which we require to complete our essential work:-

- In terms of our skilled workforce, we are expecting the recent turbulence in the labour market to continue, leading to increasing delivery costs within our sector. Resulting from other GDNs' striving to bring their Repex programmes back on track. Further afield, outside the GDNs, we are facing pressure from other competitive sectors including nuclear, telecommunications, water, smart metering, rail and electricity as their workloads increase.
- HS2 has created over 150 gas diversions, putting pressure on the availability of qualified resources in the UK.
- the approval of Hinckley Point has created localised inflation as the nuclear industry looks to ramp up investment in the SW of England.
- The rollout of the national Smart Metering programme has resulted in additional network costs being incurred. This is expected to increase as the programme develops.
- The introduction of the Apprentice Levy has increased payroll costs by 0.5%. We are trying to recover what we can on this through the training of our apprentices along with upskilling other employees as appropriate.
- Recent low oil prices have helped achieve our outperformance of the allowance over the first few years of the RIIO-GD1 price control. However, external forecasts indicate that these low prices will not be sustainable in the future. There are already signs of increases, the obvious example being the increase in fuel pump prices to over £1.27/litre during 2018/19.
- The recovering economy is starting to drive up prices as general demand within the economy increases.
- Whilst little impact has been seen to date, the Brexit vote in favour of Great Britain leaving the EU is also adding to future uncertainty. Future impacts may include:-
  - Reduced immigration leading to increased demand for scarce labour resources,
  - EU Legislation ceasing to apply in Great Britain and its replacement with alternative domestic legislation.
  - Increased cost of purchases from Europe Stock Market and property market impacts affecting RPI and pension valuations.

To help mitigate these cost pressures we have engaged in a number of specific activities, these include;

- The South West procurement hub to utilise the combined purchasing power of utility businesses in Wales & South West England.
- Leveraging the combined purchasing power of the wider group of companies in the UK with common shareholder interests. Operating across utility sectors and across the UK.
- Market testing of all controllable costs over 3-5 year programme of procurement events.
- Utilising framework contracts and mini-competition events to drive lowest cost solutions for the majority of the work we outsource.
- Identifying alternative sources of supply for materials and products, including overseas sourcing.
- Giving our Repex contractor workforce longer-term visibility of the projects available to them, to encourage stability and a longer term working relationship built on mutual trust.
- Maintaining, since our inception in 2005, a largely insourced operating model, providing resource stability and enabling retention of corporate experience and knowledge.
- Continuing with our apprenticeship programme, which we started in GDPCR1, to ensure skills levels are maintained in line with workload for the future.
- We are bringing innovative solutions and techniques to fruition. We are constantly sourcing new technologies to ensure an efficient, safe and reliable delivery programme.
- We are also reviewing our delivery model to review the possibility of a more efficient structure for organising and performing our work.
- We have good working relationships with the trade unions with focus on an insourced resource model.
- Increasing workload programmes to offset the risk of losing key resources in the future. We face significant issues with workforce being attracted to similar companies offering higher pay in the short term.

Whilst we will continue to mitigate cost pressures where we can, we expect costs to grow at more than inflation in the future.

4

Totex Cost Summary: how we manage the network

In this section:

4.0 Totex Cost Summary: How we manage the network

To demonstrate how we manage on a Totex basis, we set out below a summary table across the four committees under which we operate.

The totals in the table below and those in section 3 above are identical. The spend within each of Opex, Repex and Capex has been regrouped by operating committee to better reflect how we manage the network.

2018/19 Totex £m (2018/19 Prices)	Section	Actual cost				Allowed cost				Var
		Capex	Repex	Opex	Totex	Capex	Repex	Opex	Totex	Fav/ (adv)
Network management	6	10.9	0.0	17.7	28.6	18.4	0.0	17.6	36.0	7.4
Repex	7	0.0	70.9	0.0	70.9	0.0	97.4	0.0	97.4	26.5
Emergency & repair	8	18.2	7.0	17.8	43.0	21.7	6.7	31.8	60.2	17.2
Business operations	9	26.0	0.0	48.4	74.4	19.3	0.0	59.9	79.2	4.8
Totex		55.1	77.9	83.9	216.9	59.4	104.1	109.3	272.8	55.9

The Totex performance for the RIIO-GD1 price control period to date, in constant 2018/19 prices, is:

Cumulative Totex £m (2018/19 Prices)	Section	Actual cost				Allowed cost				Var
		Capex	Repex	Opex	Totex	Capex	Repex	Opex	Totex	Fav/ (adv)
Network Management	6	67.5	0.0	118.1	185.6	118.1	0.0	101.4	219.5	33.8
Repex	7	0.0	437.3	0.0	437.3	0.0	580.8	0.0	580.8	143.4
Emergency & Repair	8	98.4	43.2	120.0	261.6	129.2	41.9	193.8	367.3	103.3
Business Operations	9	150.3	0.0	312.2	462.5	146.5	0.0	366.1	510.2	50.3
Totex		**316.2**	**480.5**	**550.3**	**1,347.0**	**393.8**	**622.7**	**661.3**	**1,677.8**	**330.8**

5

Forecast

In this section:

5.1 Opex Forecast

5.1.1 Opex Cost Forecast

Forecast costs (2018/19 Prices) £m	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	2017/18 view
Work Management	25.5	22.4	22.5	21.3	20.3	18.9	22.5	22.7	**176.1**	180.5
Emergency	11.1	11.4	9.8	10.4	10.2	9.2	8.0	7.9	**77.7**	81.5
Repair	10.8	10.9	9.2	10.5	8.1	8.7	7.4	7.5	**73.2**	77.4
Maintenance	15.9	19.6	18.6	18.9	15.9	17.5	15.6	16.3	**138.5**	139.4
Other Direct Activities	21.5	14.9	7.4	7.2	7.0	5.6	5.3	5.9	**74.8**	76.0
Total Direct Opex	**84.8**	**79.2**	**67.5**	**68.3**	**61.5**	**59.9**	**58.8**	**60.3**	**540.3**	**554.8**
Total Indirect Opex	20.2	19.6	23.1	23.6	18.6	24.0	32.7	34.3	**196.1**	197.7
Total Opex	**105.0**	**98.8**	**90.6**	**91.9**	**80.1**	**83.9**	**91.5**	**94.6**	**736.4**	**752.5**
2017/18 view	105.0	98.8	90.6	91.9	80.1	93.2	95.1	97.8	**752.5**	

The forecast costs reflect the following:-

- Repair workloads forecast in line with the deterioration assumptions and profile of mains replacement over the remainder of the 8 year period.
- Increased investment in enablers such as more reliable vehicles and better tooling has increased productivity levels.
- As productivity levels of direct labour resources increase availability of those resources increases allowing them to pick up additional Mains Replacement & Capital workloads; reducing the need for external resources. This reduces unproductive costs in Opex.
- The forecast reflects an improved succession plan, taking into account retirees, apprentice intake, different pension arrangements and grade changes.
- Updates to management initiatives and new processes are reflected in both the actual costs and in the forecast i.e. Working Time Solution benefits.
- The forecast takes into account any updates in external costs i.e. Xoserve.
- We have not included any additional costs at this stage for the rollout of Smart Meters, due to continued uncertainty over timing and involvement.
- As the economic climate improves, we expect to see wage and contractor rates increase, noting that customers have benefitted from suppressed rates during the economic downturn.

Metering and Smart metering work

Since its creation in 2005, WWU has maximised non-regulated meter work to minimise the inevitable amount of unproductive time created by having to respond to a PRE anywhere across the large geographic network, within which we operate. Until 2008 most of this work was delivered through contracts with OnStream and National Grid Metering ("NGM"). In 2008 the OnStream contract went to tender and WWU's bid was unsuccessful. However, the NGM metering work across both domestic and non-domestic sectors has remained our core metering activities and added valuable income to the business.

This has enabled us to keep the critical mass of First Call Operative required to maintain a safe, efficient network 24 hours a day, 365 days a year.

Over the years the changes in the metering arena have seen the workload provided by these contracts reduce as events such as, metering competition and more recently Smart Metering, have eroded the volumes available via the contract with NGM.

Officially, the Government target for the completion of the Smart Metering rollout is still 31st December 2020. However, over the past four years only about 30% of Traditional Meters have been replaced by Smart leaving approximately, 1.75 million traditional gas meters to be exchanged in 18 months within the WWU network alone. It is unlikely that this will be achieved by the current deadline and the expectation is that the deadline will be extended.

To mitigate the impact of this reduction, which is still forecast to disappear in 2020, we successfully bid for a Smart Metering contract with National Grid Smart (NGS) which finished in July 2019 having installed our first Dual Fuel Smart Meter in December 2016. The ability to install and maintain electricity and gas Smart Meters gives us the ability to deal with Smart Meters into the future.

5.1 Opex Forecast

There are multiple benefits in obtaining this work over and above the obvious ones of improving efficiency and offsetting the stranded cost increases associated with the disappearance of Traditional Meter work.

- Nationally there is expected to be a significant shortage of gas engineers, to deliver this work, and it is forecast that there will need to be over 10,500 additional gas engineers at the peak of the Smart Meter rollout programme. We have skilled and experienced gas engineers who can assist in delivering the Smart Metering targets, both gas and electric, within the UK.
- The work will also give us an in-depth knowledge of the issues created by Smart Meters, as well as increasing the knowledge and understanding of our engineers, when it comes to giving advice to customers regarding things like energy efficiency and the use of In Home Display (IHD) units.

The introduction of Smart Metering will be confusing for some customers and we will, without doubt, be the first call to many of these issues. We are committed to making sure our First Call Operatives can deal with as many of the customer concerns as possible and maintain our reputation for delivering outstanding levels of Customer Service.

5.1.2 Opex Workload Forecast

The forecast workloads are shown below;

Forecast workload	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	FPs
Opex										
Mains condition reports	5,636	6,424	5,569	6,421	6,052	4,889	6,040	6,073	47,104	71,694
Service condition reports	6,317	5,417	5,943	5,621	5,249	5,929	6,284	6,245	47,005	37,518
No. of holders removed	2	7	1	-	-	-	-	-	10	c. 7-8

Mains reports are below the level in Ofgem's FPs with service reports being higher than FP's. Forecast numbers are based on an average winter severity. So far, this control has seen exceptionally mild winters resulting in lower than forecast repairs. We estimate a severe winter could add at least 2,000 mains repairs and 1,000 service repairs to our workload. Whilst report numbers are used in preference to repair numbers in table 2.3, our view remains that repairs are a better measure as many people can call in one escape but the repair drives the cost.

We have accelerated and exceeded the requirements for holder demolition with 10 delivered to date against a target of 7-8 over the whole control. The opportunity to remove more risk on this group was taken following a review of ongoing Opex costs, safety risk and the opportunity for an efficient delivery programme. We have not found risk to be as high as expected on other asset groups following survey results (e.g. Service governors) so the decision was made to invest in the holder programme.

5.2 Repex Forecast

5.2.1 Repex Cost Forecast

Forecast costs (2018/19 Prices) £m	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	2017/18 view
HSE driven mains & services	72.6	65.3	62.2	62.6	54.0	60.6	69.6	68.1	**514.9**	522.3
Non-HSE driven mains & services	6.8	17.4	19.6	17.8	14.1	15.5	9.3	9.1	**109.6**	105.7
Risers	1.7	2.7	2.3	2.0	1.5	1.8	1.6	1.8	**15.4**	14.7
Total Repex	**81.1**	**85.4**	**84.1**	**82.4**	**69.6**	**77.9**	**80.5**	**79.0**	**639.9**	**642.7**
2017/18 view	81.1	85.4	84.1	82.4	69.6	77.3	81.5	81.4	**642.7**	

Forecast Repex costs reflect the following areas that impact on expenditure levels:

- Continued delivery of our key Iron Mains abandon targets utilising our existing alliance contract which has now been signed for the entire eight year RIIO-GD1 period giving more certainty to costs.
- The cost of delivery is impacted by the size and type of project that we can efficiently design in any one year to meet our risk targets. To deliver significant customer benefit in the last three years, we have been able to target the most efficient size projects. Future year's costs will therefore proportionately be higher as we need to meet risk targets but may not be able to design projects that reflect the last three years.
- We are continuing to experience labour market rate demand increases and are balancing costs with retaining experienced resource in a competitive sector including water, electricity and rail.
- Introduction of innovative products are now reflected in our forecast such as ductile iron cutting tool, mobile apps and single flow stopping equipment. This is mitigating some of the cost pressures we expect to see in the future.
- Work will become more dispersed in future years and we will start to incur a higher delivery cost in terms of both support and delivery costs.
- Our current insertion ratio following design is better than we have historically achieved but analysis shows this will drop significantly through RIIO-GD1 and through the remainder of this programme to 2032 and will have an adverse impact on the cost of the mains replacement programme.
- Continued focus on efficient delivery, which supports the on-going outperformance.

5.2.2 Repex Workload Forecast

Forecast workload	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	FPs
T1 length decommissioned	333.4	365.7	345.1	337.4	299.1	306.8	355.6	355.6	**2,698.7**	2,638
T2 length decommissioned	21.7	21.5	20.9	30.9	30.1	25.0	43.6	43.6	**237.2**	237
T3 length decommissioned	1.4	1.7	0.8	1.1	1.0	0.3	1.3	1.3	**8.8**	1
Steel length decommissioned	64.8	66.8	100.3	84.6	69.9	62.0	34.4	34.4	**517.3**	571
Other length decommissioned	28.5	25.3	8.9	17.1	17.6	15.2	12.5	12.5	**137.6**	56
No. of services transferred	19,750	20,361	17,308	17,354	14,043	12,934	16,233	16,233	**134,216**	132,102
No. of services relaid	22,851	23,770	21,642	23,268	18,083	17,146	21,610	21,610	**169,980**	210,329

- We plan to deliver the Repex programme as per FPs, exceeding length targets in some categories. As we deliver this programme we replace all metallic services and transfer all PE services encountered. As can be seen in the table above, the relays and transfers are not as forecast and we explain this in detail in the Repex (section 7) of this document.

5.3 Capex Forecast

5.3.1 Capex Cost Forecast

Forecast costs (2018/19 prices) £m	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	2017/18 view
LTS, storage and entry	9.6	7.0	12.3	9.9	7.7	9.6	8.3	9.0	**73.4**	72.3
Connections	11.6	10.5	13.0	11.9	13.0	12.6	12.9	12.6	**97.9**	96.2
Mains Reinforcement	4.3	3.9	3.7	3.8	4.7	5.6	5.0	4.4	**35.4**	33.0
Governors (Replacement)	2.6	2.3	2.7	1.7	1.0	1.3	2.3	2.3	**16.1**	16.2
Other Capex	29.3	24.1	21.6	24.2	24.6	26.0	26.4	21.8	**198.4**	185.6
Total Capex	**57.4**	**47.8**	**53.3**	**51.5**	**51.0**	**55.1**	**54.9**	**50.1**	**421.2**	**403.3**
2017/18 view	57.4	47.8	53.3	51.5	51.0	48.2	46.3	47.7	**403.3**	

The forecast Capex costs reflect the following areas that impact on expenditure levels:

- Continued delivery of our key reliability outputs targets, adjusting them where appropriate for changes to workload assumptions, e.g. fuel poor connections.
- Connections service workload is expected to be similar to 2018/19 through to the end of RIIO-GD1. However, the unit cost of delivering the fuel poor connections is expected to rise as we need to do more work to promote the fuel poor schemes and gather evidence of eligibility face to face rather than as a desktop exercise. We also expect to see a continuation of the volumes of small scale power stations generating peak electrical power and biomethane sites connecting to our network.
- Specific reinforcement workload (pipes and district governors) is forecast to continue to grow as similar to 2018/19 with an increase in the number of new housing schemes given planning permission and developers starting to build homes and take gas. Specific reinforcement will also be required to support some of the small gas fired power stations as well as CHP plants at Industrial sites, District Heat networks around our network, and biomethane injection points.
- Continued implementation of the ALARP methodology for LTS pipelines which has reduced capital costs.
- Continued investment in a programme to replace boilers which have reached the end of their asset life with new efficient boilers and this will also reduce our ongoing Opex costs i.e. taking a Totex approach.
- CPNI has reduced from 2018/19 onwards following completion of the security upgrade projects by the end of December 2018 subject to one camera repair needed at Gilwern. This is outstanding due to the lead time on parts needed.
- Updated detailed asset plans specifying size and location of installations/refurbishments allowing greater accuracy for future years planning.
- Continued focus on efficient delivery which supports our on-going outperformance.

5.3.2 Capex Workload Forecast

Forecast workload	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 F'cast	2021 F'cast	Forecast RIIO Total	FPs
Total mains reinforcement (km)	11.32	13.44	9.82	12.60	17.51	22.80	26.00	25.00	138.00	200.00
Total reinforcement Governors (#)	-	-	4	-	1	1	3	3	12	128
Total connection services (#)	11,498	11,294	11,640	11,933	11,074	10,857	11,249	10,957	90,502	98,060
– New housing services (#)	2,898	3,595	3,878	4,463	4,370	4,097	4,134	3,843	31,278	21,355
– Existing housing services (#)	5,381	5,508	5,563	5,235	4,998	5,086	4,998	5,012	41,781	59,760
– Non- domestic services (#)	587	530	640	639	655	591	613	598	4,853	6,145
– Fuel poor services (#)	2,632	1,661	1,559	1,596	1,051	1,083	1,504	1,504	12,590	12,590
Governor interventions (#)	94	90	35	24	16	14	12	12	297	514

Reinforcement lengths have been less than forecast in the early years of RIIO-GD1 but have returned to the forecast levels in the last few years. This is a result of the steady recovery in the housing market and an increase in connections of small peaking power plants. These 'peakers' are required to balance supply and demand on the electricity network with the increase in intermittent wind and solar generation. We continue to engage with DNOs to understand the future requirement for peakers and ensure the overall energy network is optimally balanced with storage on the gas network enabling intermittent green energy generation on the electricity network.

Connections workload is clearly customer driven and is forecast to be 10% lower than final proposals. The forecast service fuel poor number is dependent on customers who qualify for the warm house assistance programme being able to access funding.

The governor intervention forecast only includes Capex replacement. Our Totex intervention plan for governors is also focused on Capex refurbishments and Opex life extensions. As such, a simple count of the Capex work vs FP is not an indication of the delivery of the asset health and risk outputs. Our current forecast submitted in table 7.3 shows our Totex plan delivers the output requirement for this asset group.