Keeping people warm

while protecting the planet

Cadent

Your Gas Network

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How to use our business plan

We use interactive features to link to various chapters of our plan to aid navigation.

References to other documents submitted are shown in the title pages to each chapter.

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Read more

Steve Fraser shares his ambitions for the RIIO-3 plan

Steve Fraser, CEO

Q How is this plan different to the one you produced at RIIO-2?

A Our RIIO-2 plan set out to drive down our cost base and radically improve customer service – and I am now proud to say that we have made huge strides in making this business one that truly puts customers at the heart of what we do. We have massively improved our customers' satisfaction with our services and will have delivered c.£625m of operational efficiencies by the end of the RIIO-2 period. This has established us amongst the frontier customer service performers in the sector, and our RIIO-2 plan set Ofgem's comparative efficiency benchmark for the sector.

Our RIIO-3 plan is built on these strong foundations. **We will not stand still, and continue to push the boundaries for the sector.**

This plan will take us on the next step of our journey and continues to ensure we do the very best for our customers. We need to continue to invest to maintain the truly world class assets that we have, so that the gas network can play a crucial role in delivering net zero over the decades to come.

We need to do that whilst tackling some significant cost pressures (particularly in the mandated iron mains replacement programme) and continuing to ensure our component of customers' gas bills remains affordable, whilst continuing to protect the most vulnerable in society. **This plan, I believe, is a real manifestation of our purpose which is 'keeping people warm, while protecting the planet'.**

Q What would you say makes this plan stand out?

A We have set out seven areas in the plan where we are pushing the boundaries for the sector (see page 9), but two things in particular stand out for me over and above my relentless passion for delivering leading customer service at an efficient cost:

First, we have sought out, and trialled, best practice technology from other countries and have applied this learning to set out **an ambitious programme of work to drive methane leakage down.**

Our RIIO-3 plan will deliver an industry blueprint for integrating the rollout of leakage detection technologies (such as vehicle mounted sensors) and a digital platform for leakage analytics which we have developed in RIIO-2. From this innovation, we have created a targeted intervention programme to address our leakiest assets (see our case studies on page 45 and page 46). This will deliver an incremental 10% absolute reduction in leakage in RIIO-3, with investment that pays back to customers and society within 16 years (Ofgem's guideline for gas distribution investment). Our plan is also aligned to the Health and Safety Executive's (HSE's) 'minded-to' position on the safe management of these assets.

Second, we want to **build on the pioneering work we have undertaken in RIIO-2 in protecting what we do for the most vulnerable in society.** Our RIIO-3 plan delivers more support and impact for customers and society for 10% less funding. As an example, with this funding we will save an average £2,000 for at least 250,000 customers who are in fuel poverty. We will also deliver specific initiatives to support all 37 different types of vulnerability defined under the Priority Services Register (see our case studies on Centres for Warmth and the Direct Access for Welfare Services (DAWS) project on page 60).

We hope Ofgem will support our proposals to maintain network assets that the UK can rightly be proud of, which continue to provide people with warmth, and power industry every day, whilst playing an active role in delivering net zero.

Transporting critical energy for the UK

We are, by some way, the largest gas distribution company in the UK, delivering gas to c.11 million homes, businesses and 40,000 industrial customers. We feed 188 power stations and connect 45 biomethane production plants and 14 compressed natural gas offtake sites.

In doing this, we are responsible for maintaining our network, ensuring that it operates safely and reliably for those who rely on it. We also help homes, businesses and renewable gas suppliers connect to our network.

Collectively our networks carry almost as much energy as the entire UK electricity network does today and include the three largest cities of London, Birmingham and Manchester. Our networks have very different characteristics, however, given the diverse regions they cover.

Our North West network is unique in that 40% of the gas is used for industry. In contrast, our North London network is dominated by a metropolitan landscape of high rise and multi-occupancy buildings with a more transient customer base.

Our West Midlands network covers major urban and industrial areas including Birmingham. The Eastern network is more complex and spans the urban areas of the East Midlands, the rural and coastal areas of East Anglia and South Yorkshire, and the borders with London.

Our four networks

North West

2.7m
homes and businesses

West Midlands

2.0m
homes and businesses

Eastern: East Midlands and East of England

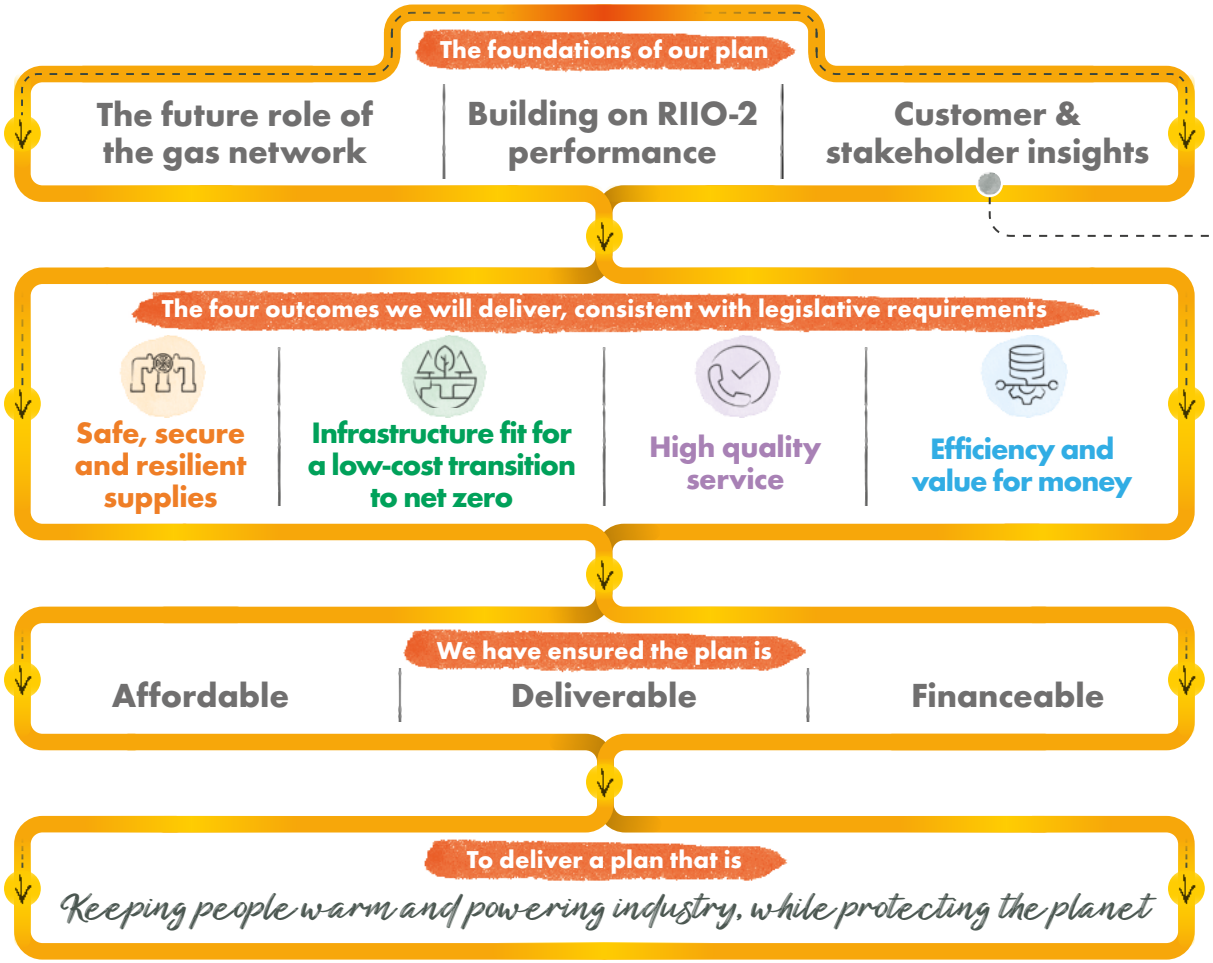
4.0m
homes and businesses

North London

2.3m
homes and businesses

The golden thread of our plan

There is a central 'golden thread' running through our plan, linking the solid foundations we have established to the four key outcomes set out by Ofgem, which we have embraced in our plan, and that our customers and stakeholders expect from us. We have ensured the overall plan is affordable, deliverable and financeable, ultimately delivering a plan that is not standing still, but pushing the sector forward to support our customers.



We have engaged with a wide number of stakeholders across the outcome areas

	Safe and resilient	Net zero	High quality	Efficiency
Policy makers and influencers	12	24	3	11
Interested parties and consumer interest bodies	11	11	146	13
Wider industry and supply chain partners	35	35	22	>200
Partners and enablers	120	7	46	105
Customers	>50k	>50k	>50k	>50k

The five key customer insights

1. Continue to invest in the network to at least maintain safety, reliability and resilience standards
2. Keep services affordable
3. Maintain high levels of customer service, enhanced through digitalisation
4. Ensure that the most vulnerable are supported
5. Drive the delivery of net zero

Around 35% of the nation's energy needs are transported through our networks, and hence we provide critical infrastructure to keep customers warm, and power businesses and industry across the regions we serve.

It is essential therefore that we continue to target investment in our network to deliver a safe, reliable and resilient service whilst also ensuring that customers pay no more than necessary.

We also want to play a leading role in the transition to net zero and provide resilience to the UK energy system, whatever the decarbonisation pathway we follow.

We have built this plan on three solid foundations, which we explain in more detail:

Foundation 1: A realistic view of the future role of the gas network, which is based on robust analysis of the likely pathway the country might practically follow as we seek to deliver net zero.

Foundation 2: Performance that puts us amongst the frontier companies as we exit the RIIO-2 period and which we can build on for RIIO-3.

Foundation 3: A robust understanding of what our customers and stakeholders expect now, and in the future, from the gas network.

Foundation 1 – The future role of the gas network

The gas network will play a vital role for customers now and for several decades to come.

We have very much led the way for the gas sector in seeking to understand and articulate what role the gas network is likely to play over the coming years. This was encapsulated in the report we published in May 2024 entitled The future of the gas network – the crucial role gas networks will play in delivering net zero.

The report considered evidence from a variety of sources including the Climate Change Committee, Energy System Operator Future Energy Scenarios, academic research and experience from other European countries. The report concluded that the gas network is going to be around for many years to come (the 2040s and beyond), and that it will play a central role in the delivery of net zero. In addition, through our customer insight work, **only 3% of the customers we surveyed** stated a firm intention to replace their gas heating appliance in the next 5-7 years.

We will need to ensure sufficient ongoing investment in the operation and maintenance of the network to ensure it is safe and reliable. We also will need to drive innovation and think differently about our role. We need to promote the use of hybrid heating technologies (that enable customers to change their heating systems more easily); reduce our methane leakage; and substitute methane for green gases like biomethane and hydrogen.

Foundation 2 – Building on strong performance in RIIO-2

We are in a great position to build on and leverage the strong performance we have delivered in RIIO-2.

We are proud of the progress we have made in delivering the commitments set out in our RIIO-2 business plan which has, and continues to, improve experiences for our customers (see Figure 2). We have now established ourselves amongst the frontier cost performers in the sector. Our RIIO-3 plan reflects that we are in a very different place to when we submitted our plans for RIIO-2.

Figure 1: Our analysis suggests we are now the most efficient ownership group, based on reported performance over RIIO-2.
(1 is average industry efficiency and lower is better)

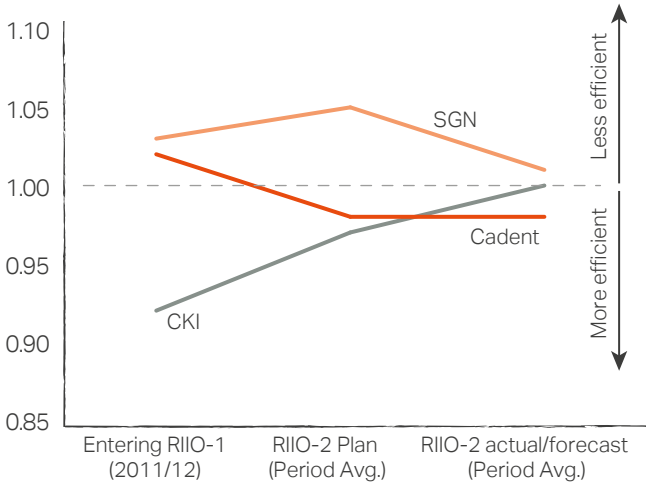
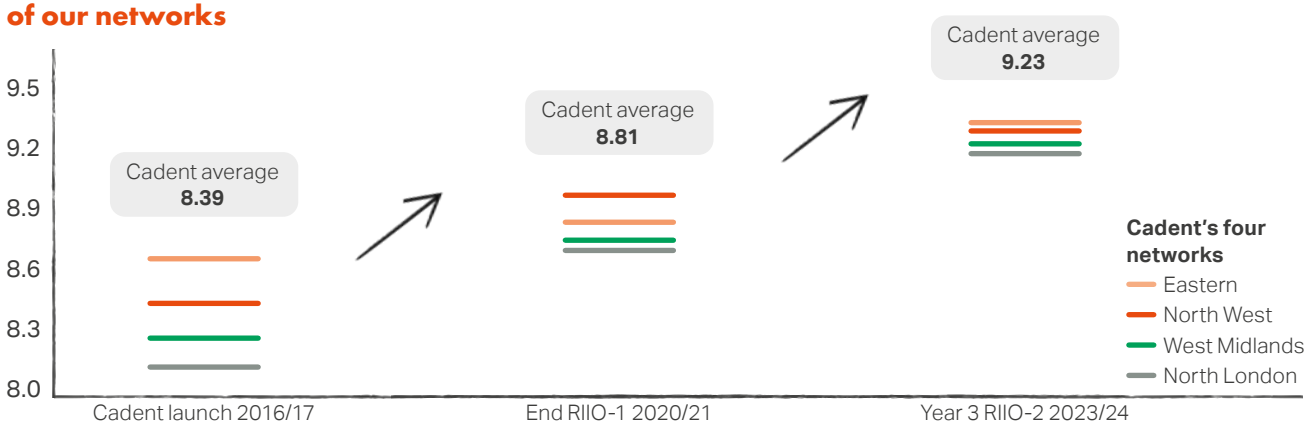


Figure 2: We have continued to improve our customer satisfaction scores over RIIO-2 across all of our networks



Foundation 3 – Customer and stakeholder insight

We have continued to understand what our customers' expectations are of us so that this plan would reflect that and not just be a 'plan for the regulator'.

Through our extensive customer and stakeholder engagement, we have a rich picture of what customers (and wider stakeholders) expect from us. We have published our findings over the last three years, including through our reports 'Listening and acting for consumers 2024' and our 'Energy Diaries'. Further detail on how we have used this insight is shown in our Stakeholder engagement and decision log Appendix 11. We have been effectively challenged throughout this process by our Independent Stakeholder Group who have given constructive challenge to ensure we provide a plan to Ofgem that delivers the right things for consumers and wider society. (See Statement from ISG Chair Appendix 12).

Notwithstanding this 'rich picture' of what our consumers and stakeholders want from us, we believe this can be summarised into five key insights:

1. Customers expect us to continue to invest in our network to at least maintain safety, reliability and resilience standards.
2. They see value in the services we provide but expect us to keep these services affordable.
3. We must maintain high levels of customer service and seek ways for continual improvement, especially as the world becomes increasingly digital.
4. There is a critical role for us in supporting customers living in vulnerable situations, especially in relation to fuel poverty.
5. There is an onus on us to drive the delivery of net zero, making large scale interventions and reducing greenhouse gas emissions.

To find out more about our consumer insight work, visit

Cadent RIIO-3 Summary Report

The Energy Diaries

Energy Diaries

Our outcomes

This plan is based on these foundations, and sets out what we intend to deliver over the next five years, and how. While there is much supporting analysis to justify what we plan to deliver and spend, our plan is actually very straightforward. It is built around the four key outcomes set out by Ofgem, which we have embraced for our plan.

The four key outcomes

1 Safe, secure and resilient supplies

To maintain investment in the gas network to ensure it continues to deliver world class safety, reliability and resilience.

2 Infrastructure fit for a low-cost transition to net zero

To drive down methane leakage from our pipes, we will reduce emissions of harmful greenhouse gases by rolling out the state-of-the-art technology we have invested in during RIIO-2.

3 High quality service

To drive a quality experience for all customers and to support customers in vulnerable situations by implementing and expanding the sector-leading initiatives we have developed over the past five years.

4 System efficiency and long-term value for money

To continue to innovate to reduce our costs, striving to be efficient in order to keep our component of the customer gas bill as low as possible, but also ensuring that the plan we put forward is investable, which is driven by the rate of return Ofgem sets and the overall incentive framework.

These four outcomes will be delivered by a diverse and skilled workforce united by our company purpose and empowered by new technology through our data and digitalisation strategy and continued innovation.

Our plan sets out the key interventions and investment we need to make to deliver these four outcomes which our customers rely on. This leads to a very similar workload to previous price controls, with the largest activity continuing to be the Iron Mains Risk Reduction Programme (IMRRP) and workload to target the most critical asset health related risks from ageing networks.

We have sought to test and ensure all our investments provide value for money for current and future customers, recognising the role that gas networks will play in any net zero pathway. We have also robustly tested the deliverability of our plans to ensure they are realistic. This has led to a reduction in the level of investment we are proposing in comparison to the draft submission made to Ofgem earlier in the year.

At the heart of the RIIO-3 plan is largely a continuance of delivering the core customer outcomes from RIIO-2 that our stakeholders and customers are satisfied with. We have highlighted 12 of these on page 8. There are also seven new commitments on page 9 which go above and beyond business as usual and, we believe, will set new industry standards.

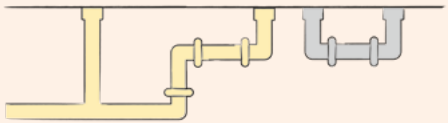
We then 'deep dive' into two of these commitments on page 10.

Executive summary

Maintaining a safe network

Replacing over **7,700km** of iron pipes with plastic ones to keep customers safe.

83% of the remaining mains replacement programme.



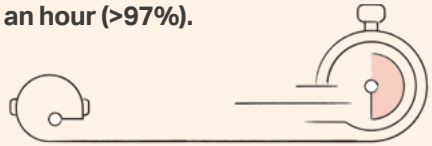
Maintaining excellent reliability

99.9% network reliability through smart asset management and seven targeted major programmes.

Only **1 in 3** customers will experience an unplanned gas interruption in their lifetime.

Delivering a rapid emergency response

Network emergency calls answered within **30** seconds (>90%) and the highest priority emergencies attended within an hour (>97%).



Keeping the network secure

Targeted operational resilience plans to manage evolving cyber, physical and climate change threats.

Reducing our business carbon footprint

Using science-based targets to deliver a **13%+** reduction from further decarbonising our vehicle fleet, property and energy usage.

Improving waste management

Reducing our environmental impact with a **2%** year-on-year reduction in waste to landfill and a range of other commitments.

12 commitments

from RIIO-2 we will continue to deliver to meet customers' ongoing needs in RIIO-3.

Making a positive impact

Offering every single household which is vulnerable as a result of a temporary gas supply outage a tailored package of personalised welfare (estimated **165,000**).

Providing excellent customer service

Maintaining upper-quartile customer satisfaction levels on emergency and repair, planned and connection services and complaint handling.

Continuing to drive efficiency

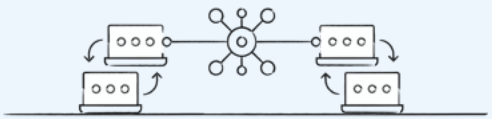
Building on £625m of efficiency gains over RIIO-2. Continuing to set Ofgem's efficiency benchmark for the sector with c.**£200m** of further ongoing efficiency savings.

Driving innovation

Strategy aligned to the four key customer outcomes and a deployment framework focusing on green operations, a smart network and a connected workplace.

Leveraging digital and data best practice

Creating a Data Sharing Infrastructure (DSI) and open data portal as well as making performance reporting more efficient.



Building workforce and supply chain resilience

Building capability, tackling skills gaps, driving efficiency through competition, collaboration and innovation, and driving workforce equity, diversity and inclusion.

In addition, our plan features

seven new standout commitments

which go above and beyond business as usual and we believe are industry firsts.

1

Leveraging our Cadent Foundation funding and successful Services Beyond the Meter programme to trial and create a blueprint for how gas distribution networks can help customers to stay safe in their homes with the aim of reducing emergency callouts and vulnerability.

2

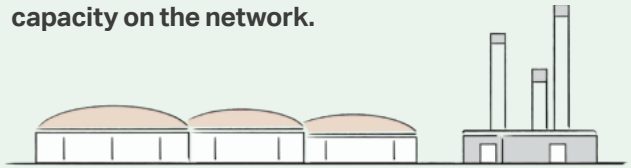
Pioneering an advanced leakage management approach deploying globally sourced advanced leakage detection technology across our networks, establishing a digital platform for analytics, which drives a targeted intervention programme delivering an additional **10%** leakage reduction and 104 $ktCO_2$ equivalent at a competitive abatement value and payback within 16 years. Generating a net societal benefit of >£420m by 2050.

3

Delivering insightful and open data from our 'Future Energy Explorer' with dedicated expert analysts to support regional and national whole system planning. Feeding insightful data into the National Energy System Operator (NESO) and Regional Strategic Energy Planners and working with local authorities and electricity distribution companies to determine practicable and efficient heat decarbonisation plans.

4

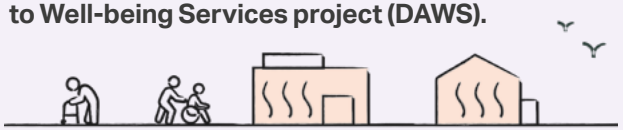
Unlocking biomethane potential by facilitating up to **15TWh** potential biomethane production to connect to our network by 2032 through a transformed commercial, operational and regulatory framework that creates capacity on the network.



5

Building on our sector-leading vulnerability strategy and initiatives to deliver more support to those in fuel poverty for less funding.

Delivering **50** more Centres for Warmth and expanding partnerships with National Health Services Charity Trusts via the Direct Access to Well-being Services project (DAWS).



6

Keeping our major cities moving by reducing roadworks and congestion through collaborative streetworks schemes with other utilities and local authorities across our regions. Building on the success of the schemes in London in RIIO-2 we propose to expand this to other major cities in the areas we serve.

7

Preparing for transition by establishing a new customer satisfaction survey for our disconnections process and working with the HSE and Ofgem to determine the policy framework and a low cost, safe and effective means to disconnect services.

A deep dive into two of our standout commitments

Continuing to support the most vulnerable

Our approach to supporting people in vulnerable situations has set the standard for the industry in terms of the real and tangible difference we have made to many people's lives in our networks. This is set out in our Vulnerability strategy (Appendix 16).

Our RIIO-3 plan looks to embed well established services (e.g. carbon monoxide education initiatives) into our baseline activities and enhance activities such as our Centres for Warmth and Services Beyond the Meter through the Vulnerability and Carbon Monoxide Allowance (VCMA) (See case study 9 on page 60).

Over the period, we will deliver even greater reach and impact than we have in RIIO-2, and yet are seeking a reduced financial allowance to achieve this (we are asking for c.£108m for RIIO-3, compared to £120m we received in RIIO-2, in 2023/24 prices). We are able to deliver more for less due to the high levels of investment during the current period, lessons we have learnt and through the establishment of an in-house expert team with over 200 years of collective experience operating in this space.

With this funding, we will deliver an average saving of £2,000 for 250,000 customers in fuel poverty through our actions (a total of £500m). We plan to deliver at least four specific initiatives to support all 37 Priority Services Register (PSR) 'needs codes', and will offer every single household that is vulnerable as a result of a temporary gas supply outage (estimated to be 165,000 over the period) a tailored package of personalised welfare. We will also deliver Services Beyond the Meter to over 200,000 customers (e.g. in house safety checks) (See case study 3 on page 37), directly educate more than one million of our customers about the dangers of carbon monoxide and maintain and enhance legacy projects established in RIIO-2.

Driving a reduction in methane leakage

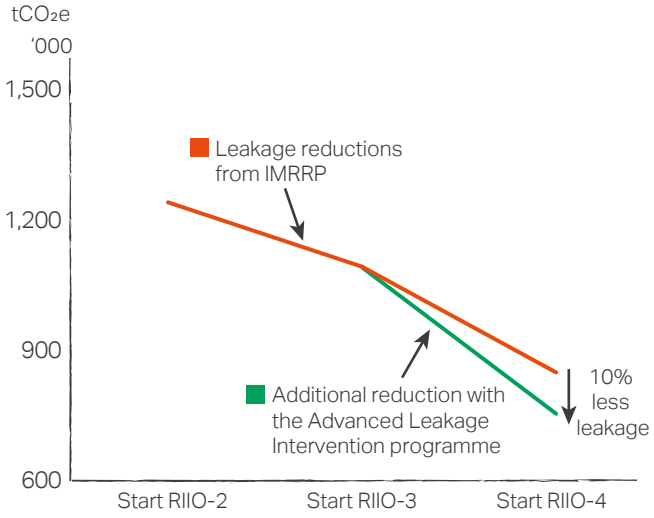
We are pushing the boundaries on driving down leakage from our network (our biggest greenhouse gas emission) through our **Advanced Leakage Management Approach (ALMA)**.

There are three components of our ALMA: Detect, Analyse, Intervene.

1. Deploying Advanced Leakage Detection (ALD) technology to capture real time, accurate leakage data.
2. Embedding a sophisticated Digital Platform for Leakage Analytics (DPLA) model to plan for the targeted repair and replacement of pipes with the highest leakage levels.
3. Delivering an Advanced Leakage Intervention Programme (ALIP). We will increasingly use the output from the ALD and DPLA to deliver a 750km proactive programme of asset remediation targeting our leakiest assets.

We estimate that we will achieve **a further 10% leakage reduction** during the period, generating a net societal benefit of more than £420m by 2050. This estimate is using data from our existing Shrinkage and Leakage Model and overlaying the results of our ALD trials to date. The ALIP initiative will add to the leakage reduction benefits that will be delivered through the HSE mandated Iron Mains Risk Reduction Programme (IMRRP).

Figure 3: We will deliver a step change in leakage reduction through advanced leakage management

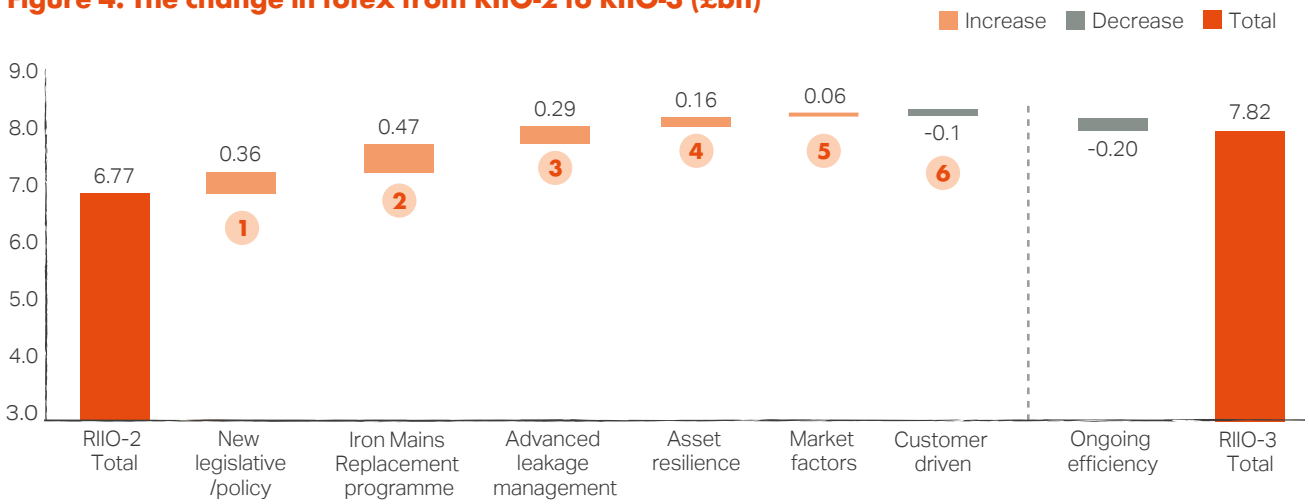


What we need to spend to deliver the outcomes our customers and stakeholders expect

We plan to spend £7.82bn (net of ongoing efficiency) over RIIO-3 across our four gas distribution networks which is an increase of £1.05bn for our four networks in real terms from our spend in RIIO-2. The increased spend is underpinned by six drivers:

1. The need to comply with evolving legislative, policy and licence obligations such as the cyber security assessment framework, workforce fatigue management requirements and streetworks regulations. ↑
2. A change in work mix to larger diameter pipes in more complex environments in the next phase of the iron mains replacement programme against supply chain competition within the sector and from other sectors. ↑
3. A cost beneficial advanced leakage management approach which will deliver a step change in leakage reduction. ↑
4. Asset health interventions to maintain a resilient network. ↑
5. Market factors such as insurance and rent increases. ↑
6. Customer/stakeholder driven requirements such as national and regional strategic planning and local capacity upgrades offset by reductions in new connections and reinforcements. ↓

Figure 4: The change in totex from RIIO-2 to RIIO-3 (£bn)



We continue to drive efficiency

Our plan aims to maintain our position as setting Ofgem's industry efficiency benchmark (as we did for RIIO-2) and we are again setting stretching efficiency targets including an assumption of c.£200m of ongoing efficiency over RIIO-3 (0.5% p.a.). This is on top of the £625m of efficiencies we will have delivered by the end of RIIO-2.

We have developed our workforce and supply chain, innovation, and data and digitalisation strategies to continue the drive for efficiency through continuous improvement, and to mitigate the complexity and cost pressures that we face.

A financing framework that makes us investable at an efficient rate

We have set out evidence of what our debt and equity investors require to fund the outputs we are committing to.

We acknowledge Ofgem's desire to balance the potential bill impacts on current and future generations of customers. However, given the uncertainty over the speed at which gas usage may change and the essential role that the gas networks will play for decades to come in any net zero pathway, we do not believe any further acceleration of depreciation is required for RIIO-3.

As requested by Ofgem, we have assessed our financeability on Ofgem's designated depreciation baseline 'Option 2' which seeks to deliver a zero Regulatory Asset Value by 2050. We believe, however, that should Ofgem want to pursue accelerated depreciation, then it should apply its 'Option 4'. This accelerates depreciation on new assets only, for a period commensurate with delivering net zero in 2050.

What this means for customer bills and affordability

Gas distribution charges make up around 19% of an average domestic customer's annual gas bill (£157 out of an average annual bill of c.£845[1]).

In this plan, we are very conscious of the need to keep our proportion of customers' gas bills as low as possible. We have therefore constrained our plan to only invest in the essential services we believe are required to meet our legislative requirements, and ones that provide value to current and future customers and wider society.

Figure 5 shows how our proposals would increase bills by £15 per annum (9%) from £157 at the end of RIIO-2 to £172 on average in RIIO-3, driven by increases in:

a) anticipated expenditure (the c.£1bn totex increase shown in Figure 4 and associated costs such as tax.

b) investor returns to debt and equity to ensure our plan is financeable, reflecting macroeconomic changes.

We also show how Ofgem's proposals relating to changes in its assumptions on how debt financing is dealt with, and different options for accelerating depreciation affect charges to customers. These changes could increase bills significantly beyond £172 up to £214 (a 36% increase vs RIIO-2).

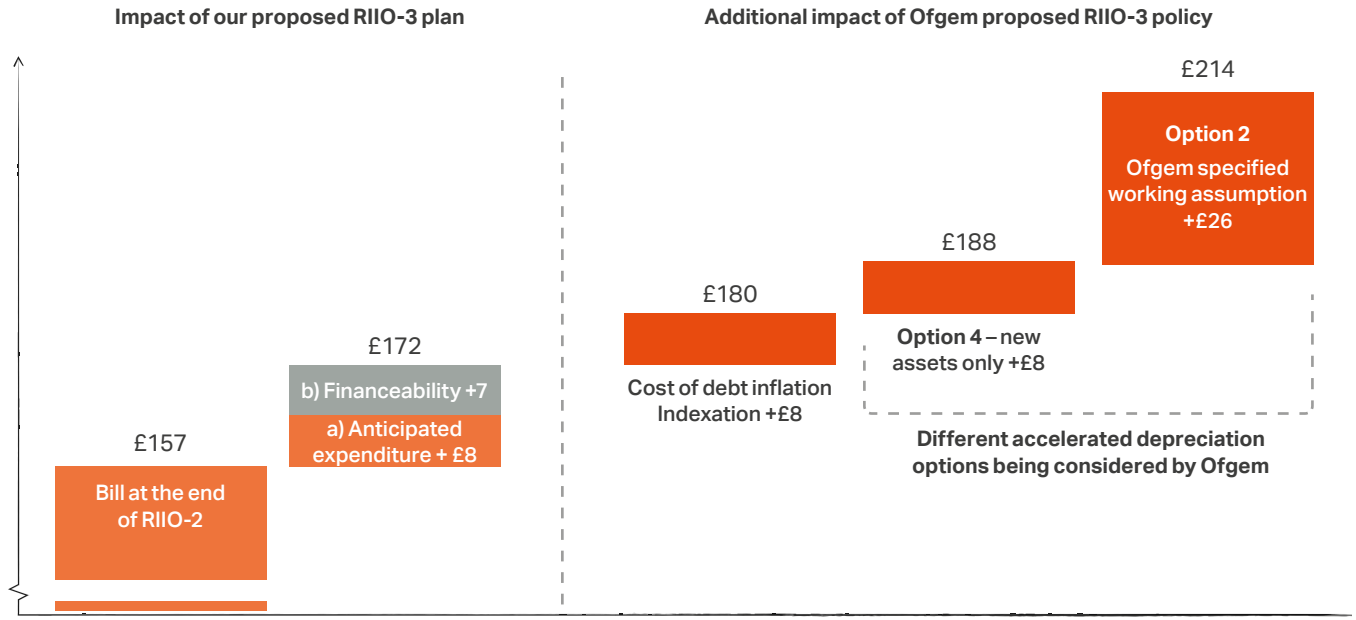
Our proposals would increase charges to customers to £172 in RIIO-3. These increases would also impact bills for industrial and commercial customers.

The figures all assume a constant number of customers at the current c.11 million customer supply points. The increases in charges would be larger if these customer numbers were to fall. For example, a 10% reduction in customer numbers would see an increase in charges of a further £26 per typical domestic customer.

Most customers see our plan as representing value for money

71% of customers we surveyed confirmed support for the proposals made in our plan as providing value for money through acceptability testing, despite rising bills and ongoing cost of living challenges faced by many. This compares with 82% support for our RIIO-2 plan, in a period when bills were falling significantly and the economy was far more buoyant.

Figure 5: The changes in contribution to the average domestic customer bill in RIIO-3



1. As per Jan 2025 energy price cap.

Executive summary

Relevant economic growth levers in Ofgem's growth duty under the Statutory Guidance Section 110 (1) of the Deregulation Act. 1 2 3 4 5 7

Infrastructure, investment and competition

2 3

Providing essential heat to key UK industries – heavy plant, steel, glass, ceramic production – supporting UK supply chains and jobs.

Facilitating and stimulating a **rapid expansion** of home grown biomethane and hydrogen blending production markets.

Supporting the electricity market through supplying over **188** power stations (2.3GW).

Stimulating the UK hydrogen economy by developing industrial clusters to decarbonise industry.

Skills

4

Directly employing over **7,000** people and a supply chain with over **5,300** jobs.

Stimulating new supply chains on larger diameter mains.

Award-winning engineering and graduate apprenticeship schemes and school outreach programmes.

Employee communities driving our Equity, Diversity & Inclusion strategy.

Sector leading support for female employees with greater female representation at senior levels.

An anti-racism focus, breaking down industry barriers.

We will deliver UK growth through a plan that is

keeping people warm, powering industry, while protecting the planet

Efficiency and productivity

5

Ongoing efficiency of c.**£200m** over RIIO-3.

Digital innovations to drive more efficient and productive asset interventions.

Streetworks collaboration driving cross sector efficiency and productivity to reduce disruption, traffic congestion and pollution.

More social return for **10%** less consumer funding to support customers in vulnerable situations.

Saving an average **>£2,000 for 250,000 customers** in fuel poverty.

Partnerships with the UK charity sector to amplify their reach and impact.

Environmental sustainability and innovation

7 1

Bringing innovations from across the world to deploy and stimulate the UK market through our technology-led advanced leakage management approach.

Creating a blueprint for rolling out and integrating **advanced leakage detection**, a digital platform for analytics and a targeted leakage intervention programme to be replicated across the industry over RIIO-3 and beyond.

Facilitating the use of biomethane resources to **lower the UK carbon footprint.**

Seeking to repurpose and drive value from the investments made in our network to support the transition to net zero.

Reducing harm to the environment by **reducing our business carbon footprint by 13%** and continuing our strong progress on decarbonising our vehicle fleet.

Foundations of our plan

We have used a range of insights to form the foundations of our plan and to shape the commitments we are making for RIIO-3. There are three foundations: a robust understanding of the future role of the gas network as we transition to net zero; how we can build on the strong base of performance we are delivering in RIIO-2; and critically what our customers and stakeholders expect from us. We have engaged with a wide cross-section of customers and stakeholders and have triangulated their insights, with the other two foundations, to determine priorities and requirements. Together this has shaped the golden thread of the plan.

We set out in each of the four key plan outcome chapters how we have shaped our plan in an *'insight to ambition'* section

In this section

Primary references to other parts of the plan

Appendices

- Appendix 11: Stakeholder engagement and decision log
- Appendix 12: Statement from the ISG Chair

Publications

- The Future of the Gas Network
- Listening to our customers
- Energy Diaries

Supporting documents

Appendices

- Appendix 2: Climate resilience strategy
- Appendix 6: Environmental Action Plan
- Appendix 8: Innovation strategy
- Appendix 10: Network Asset Management Strategy
- Appendix 14: Digitalisation strategy
- Appendix 16: Vulnerability strategy

Publications

- Exit Capacity Methodology Statement
- Long Term Development Statement

The gas network in the UK today is vast, delivering more than 242TWh of energy to homes, business and industry each year

Our gas networks are an essential component of the UK's energy industry with:

- 50% of gas customers served by our network to provide the energy they need to stay safe and warm.
- c.11 million homes and businesses connected to our network.
- 132,000km of pipeline maintained.
- Over 12,000 people employed in managing and maintaining the networks.
- More than 242TWh of energy delivered to homes, businesses and industry each year with 99.99% reliability.

As such, the challenge of decarbonising the energy sector in the UK is huge, and all scenarios suggest our existing networks will be critical to enable the transition to net zero, and that regardless of the pathway we follow, we will still need a gas distribution network in the 2040s and beyond.

Today's gas distribution networks are highly interconnected with many customers served by shared pipelines

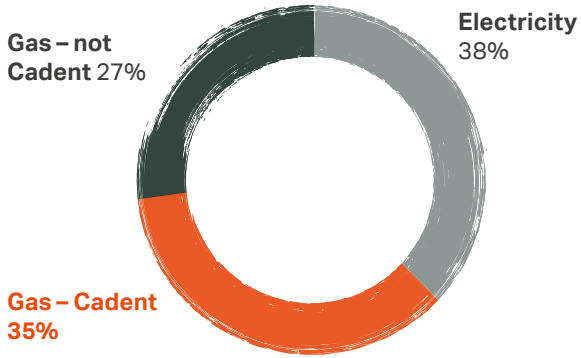
As well as over 10 million domestic supply points, our networks feed nearly 40,000 industrial customers, 350,000 different residential commercial connections, 4,180 industrial sites (from the very small to the very large). This includes critical national institutions such as schools, hospitals and universities.

Our industrial customers are located across our networks, often right alongside homes and businesses. They span a wide range of sectors, from agriculture to steel, and often have processes that require very high temperatures. Production at these high temperatures, sometimes exceeding 1,000°C, can generally be only economically run by burning gas, in appliances such as furnaces or boilers. While some may think that industrial customers are concentrated in cities and clusters, they are actually dispersed widely across the UK. In fact, only 5% of industrial demand in our networks is in defined industrial clusters. This means that decarbonising hydrogen clusters alone will not be sufficient to decarbonise industry.

Due to the diversity of customers on the network and different decarbonisation pathways for each sector, the amount of gas network needed will not reduce in proportion with gas demand

The interconnected nature of the pipelines highlights the importance of coordinated planning of gas and electricity networks through any transition and to meet customers' long-term needs. It also shows the critical imperative of continuing to ensure a safe and reliable service is provided to customers, in each sector, when they are still reliant on that service for their energy (for example, to heat their homes or run their businesses). This could be during a transitional phase or an enduring need if they are unable to change to an alternative.

Figure 6: Our networks supply over one third of the energy used by UK homes, businesses and industry.



Playing a crucial role for both current and future customers in delivering net zero

In our May 2024 publication, The Future of the Gas Network, we reviewed a wide range of data sources and independent evidence and concluded that there are three important roles that our gas networks will play to support the energy transition and help the UK to reach net zero, regardless of the pathway we take.

1. **Enabling energy solutions** that provide flexibility and resilience to accelerate the rollout of renewables and heat electrification.
2. **Driving reductions in our emissions** while our customers still need natural gas.
3. **Converting and developing the network to distribute green gases** (biomethane and hydrogen) to where it is needed, as and when our customers are ready.

Role 1: The gas distribution networks enable energy solutions to support the power system

The gas network will also continue to be needed to enable energy solutions that provide flexibility and resilience. The network provides both storage and resilience (i.e. backup) for intermittent renewable assets critical to decarbonising the electricity sector.

We currently have 188 power stations connected to our networks (2.3GW of capacity, just under 7% of total UK gas generation capacity). We expect a further 22 to connect by 2026 and anticipate 15 more per annum over RIIO-3.

In addition, the presence of a gas network also allows for the adoption of hybrid heating systems, such as those that are being installed in the Netherlands, which give customers greater choice in taking up new heating solutions. The network also provides back-up energy to industrial sites and critical national infrastructure such as hospitals which need additional resilience.

Role 2: Driving reductions in our emissions while our customers need gas

We have been looking at what we can do actively to address the risks associated with climate change and play our part in supporting the delivery of the Government's ambition to achieve net zero. We can drive further reductions in our methane emissions whilst customers still need natural gas through reducing leakage and replacing methane with green gases like biomethane. Through replacing old iron pipes with new polyethylene ones, we are improving the safety and efficiency of the network and significantly reducing methane leakage.

We will go further than ever before by implementing an Advanced Leakage Management Approach (ALMA) which will involve proactively finding and fixing leaks through the deployment of a range of technologies.

We believe biomethane has a huge role to play in reducing emissions and our plan will also maximise the potential for biomethane and hydrogen blending by facilitating connection to the network.

Role 3: Converting and developing the network to distribute green gases

Our network will be 95% polyethylene by 2032. This means it will be ready to transport hydrogen to customers where it is needed as and when our customers are ready. Our pioneering HyNet industrial cluster project is developing a new hydrogen network to decarbonise industry and power in the North West by the end of the decade. It could then link in with the local distribution network if required. This is being followed closely by other regional clusters such as East Coast Hydrogen, Hydrogen Valley and Capital Hydrogen which will involve a mix of new infrastructure and repurposed existing networks.

To find out more about the future of gas, visit

Future of gas

Future role of gas

In all credible future pathways, there is an ongoing need for the gas network for several decades to come.

Our work shows that whilst there is uncertainty surrounding the precise future of the gas distribution industry and the UK's ultimate pathway to net zero, the evidence from consumers' behaviour and scenario forecasting clearly suggests that the gas network will continue to be the UK's primary source of heat in homes and power for many years to come. For example, heat pump installations are significantly below the Government's targets for hitting net zero.

In addition only 3% of our customers are planning to change their existing gas boiler over the next 5-7 years (output from surveying 12,900 customers across the Cadent network including fuel poor and customers in vulnerable situations in 2024.) Our recent research project focusing on customer attitudes towards the energy transition has highlighted the importance of them being able to choose the technology solution in their home.

Maximising the value of years of investment into the gas network

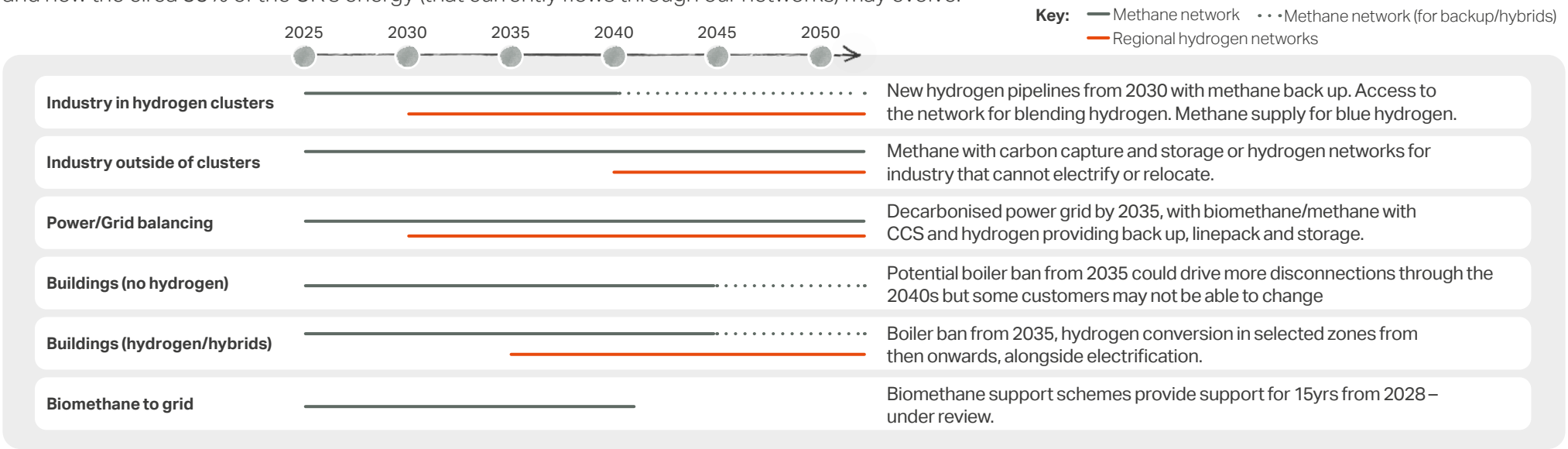
Our networks unlock the potential for a sustainable and resilient option for future customers of repurposing existing assets to support hybrid heating systems and transport greater amounts of biomethane and hydrogen in due course.

This minimises the need to replace existing infrastructure with new build avoiding disruption and cost to the public and energy consumers.

The work we are undertaking to maintain a safe and resilient network also develops a polyethylene network able to distribute hydrogen to where it is needed.

Figure 7: There is an ongoing need for the gas network

The below graph shows the likely uses of the gas distribution network across different pathways, and how the circa 35% of the UK's energy (that currently flows through our networks) may evolve.



Future role of gas

The need to continue to invest in the network to deliver a safe, secure and resilient service

Our plan is aimed at balancing the pragmatic and certain needs of the UK and its residents today and in the medium term, whilst delivering crucial investment to both minimise the environmental impacts of the continuation of a methane gas network and ready the network for greener forms of gas.

We are increasingly seeing the known challenges posed by an ageing and deteriorating metallic network. The experiences of the electricity networks in Storm Arwen and the increased impacts we are seeing from flooding and water network interactions show the important need to consider resilience. See our Climate resilience strategy, Appendix 2.

Our plan therefore sets out a case for investment to continue to provide the necessary levels of safety and exceptional reliability that our customers demand. This will ensure we do not see a deterioration in network service, whilst also making the most material impact on reducing harmful leakage of methane. This also delivers a resilient low-cost asset to heat homes and businesses where electrification is not an option.

It seeks to maximise the long-term value of past and future investment into the network, with the deployment of innovative technologies that will reduce the environmental impacts from transporting natural gas. See our Digitalisation strategy, Appendix 14, and our Innovation strategy, Appendix 8.

Given the imperative to ensure bills are affordable, it seeks to optimise interventions, pro-actively looking to minimise costs and get the maximum value from interventions, ensuring any value-based interventions have a strong cost benefit justification.

We have also incorporated Future Energy Scenarios (FES) into our proposals

There is uncertainty over the precise energy pathway that the UK, and indeed energy customers, will take towards the target of net zero by 2050.

Ofgem have specified that companies should use the NESO's 'FES 2024 Holistic Pathway' as the basis for the plan, but highlight where we need to deviate in order to meet legislative and licence and safety obligations. We have worked collaboratively with the other GDNs to agree a common set of assumptions to ensure we comply with the licence obligations whilst taking account of the Holistic FES scenario where possible.

For the gas sector, in considering load related work, we are required by our Gas Transporters licence to minimise the risk of a supply emergency throughout a 1 in 50 severe winter and on a 1 in 20 peak day. To meet our licence obligations, we book sufficient capacity to ensure that we are able to meet demand on the peak day in a 1 in 20 winter.

Consequently, our plan will enable our network to cope with winter demands based upon established industry criteria, which are published annually in our Exit Capacity Planning Methodology Statement. Further information can also be found in our annual Long Term Development Plan, utilising the 'Central Forecast' of demand provided by the NESO.

For non-load work, our investment plan requirements for safe design, construction, operation, maintenance, repair and emergency response arise from relevant Health and Safety regulations (see page 28).

The FES 2024 pathways 'represent different, credible ways to decarbonise our energy system as we strive towards the 2050 target' (NESO, 2024) and as such show ways that we could reach net zero. Our planning process takes account of our Gas Transporter licence requirements, consumer bill impacts, and industry trends.

As such, where our planning is not mandated through licence obligations regarding safety and resilience as set out above, we have developed assumptions that take account of the FES 2024 Holistic Pathway; for instance, we have used the FES Holistic Pathway to stress test our capacity upgrade requirements against different demand scenarios. We will utilise uncertainty mechanisms in the RIIO-3 framework to react if demand does change significantly from our forecasts, for example if we see higher volumes of disconnections, additional load required by biomethane being transported in our network, and future domestic and industrial hydrogen requirements.

Building on our performance over RIIO-2

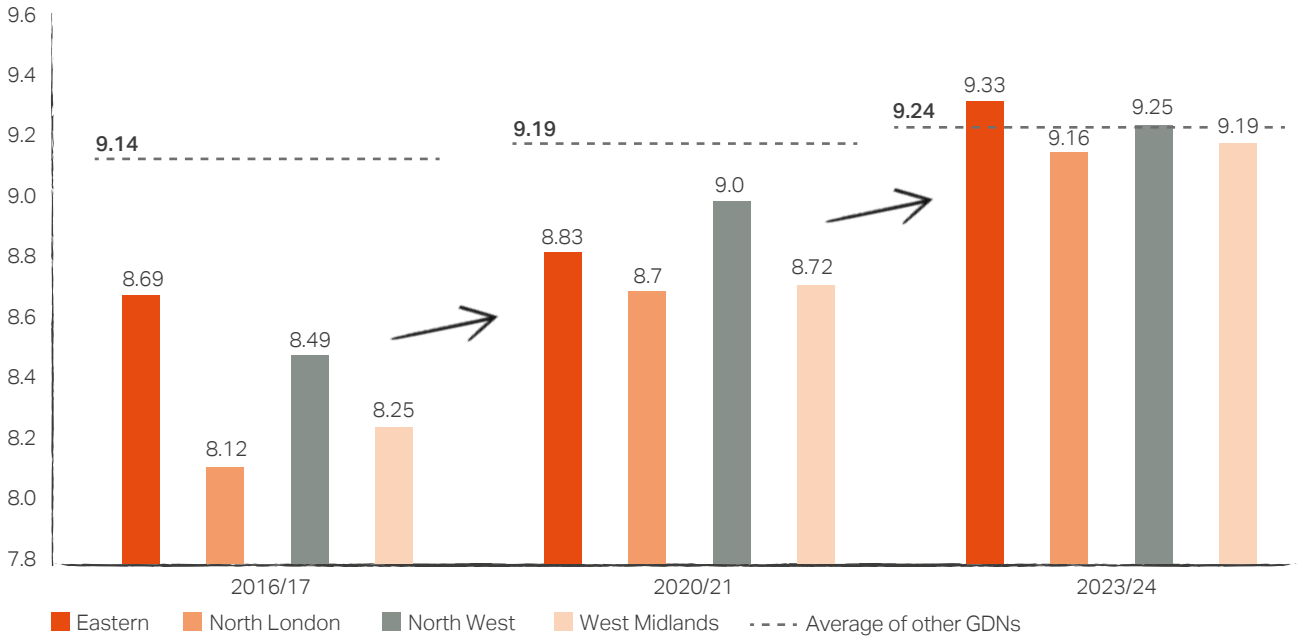
We are in a very different place to where we started in RIIO-2, and we have now established ourselves as frontier performers, creating a great platform to build from.

We have transformed the business and have delivered on the promises we made in our RIIO-2 plan, improving customers' experiences and moving from being industry laggards to leaders.

We have transformed our customer service

- We are now a solid upper quartile performer and leading the industry on our connection service. Our average satisfaction score has gone from 8.39 in 2017 to 9.23 in 2023/24 (an increase of 9%) with our Eastern network now the top industry performer. Three of our networks are now in the top four for customer satisfaction on connection services in the latest year.
- We have transformed our service to customers in multi-occupancy buildings, now avoiding interruptions wherever possible, and are now industry leading in the techniques and processes we deploy and how we engage and plan with building owners through our bespoke High Rise Building plans.

Figure 8: We have driven our customer satisfaction scores over recent years to be amongst the best in the sector



We have delivered material efficiency reductions

- We are an upper quartile performer on efficiency and have delivered on the commitments and investment plans we set out for our customers in RIIO-2, despite the significant efficiency challenge that we set ourselves and Ofgem's benchmark provided.
- Performance improvement has been underpinned by a transformation of our organisational design to a network orientated model, putting decisions much closer to the customer and changing our supply chain to support our major works.

We have continued to innovate and seek best practice from across the world

- We have sought out innovations and learning from across the world which will revolutionise how we measure and intervene to reduce leakage. These include trialling pioneering monitoring technologies that are successfully being used in Italy and the US such as the Picarro vehicle system for identifying leaks and sensor and drone technology. (Case study 5, page 46).

Building on RIIO-2 performance

Table 1: We are delivering strong output performance in RIIO-2, with our networks meeting all annual targets and on track to meet all period targets

RAG ranking of output performance*		Cadent			
		EN	NL	NW	WM
Emergency response – Uncontrolled	Annual	98.9%	98.3%	98.8%	98.4%
Emergency response – Controlled	Annual	99.3%	98.2%	99.0%	98.8%
Tier 1 mains (% vs period baseline)	Period	62%	57%	63%	61%
Tier 1 services (% vs period baseline)	Period	60%	50%	57%	51%
Connections GSoP	Annual	All >90%	All >90%	All >90%	All >90%
C-SAT – ER&R	Annual	9.67	9.55	9.67	9.63
C-SAT – Planned Work	Annual	9.05	8.68	8.91	8.85
C-SAT – Connections	Annual	9.27	9.24	9.16	9.08
Complaints	Annual	1.09	1.03	1.84	1.34
Unplanned interruptions (MOBs)	Annual	290	436	83	101
Unplanned interruptions (non-MOBs)	Annual	6	12	10	8
VCMA (£m invested over period)	Period	8.5	4.8	5.7	4.1
Fuel poor connections (% vs. target)	Period	86%	96%	47%	81%
Shrinkage Financial Incentive (£m)	Period	-0.05	0.02	0.48	-0.36
Commercial Fleet (% EVs purchased vs. period target)	Period	56.7%	45.5%	37.4%	55.3%

*Note the RAG rating is based on our review of the Strategic Performance Overview and the Regulatory Reporting Pack that we publish annually.

- Achieved annual target or on-target to meet the five-year output
- Risk of failing the five-year output commitment
- Failed to achieve annual target or forecasting to fail a five-year output

We have delivered the plan we committed to

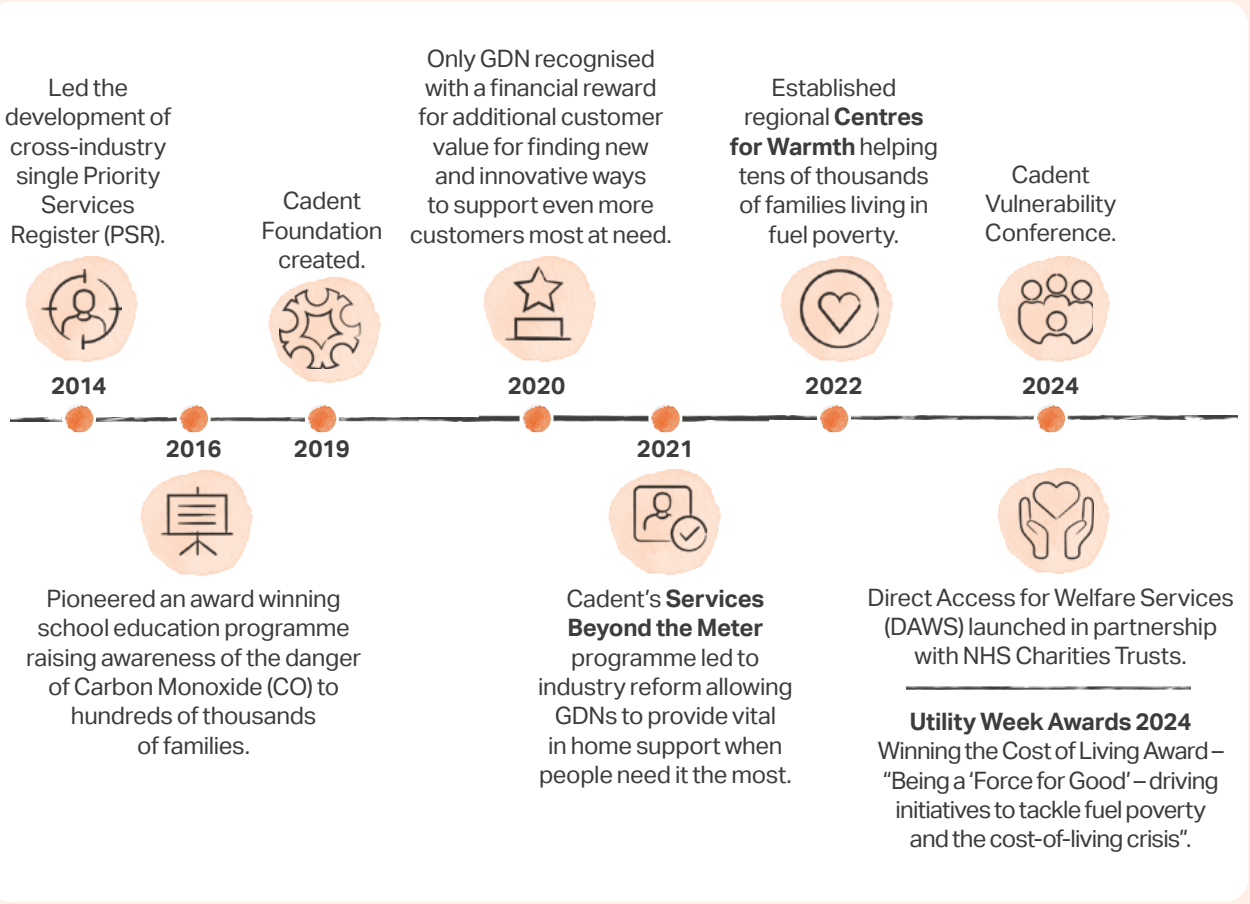
- We have delivered the investments we committed to through the Iron Mains Risk Reduction programme and are on track with our asset health investment plans for the period.
- We had a completely 'green' scorecard on all output measures in the latest performance year 2023/24.
- Other GDNs have indicated that they will not deliver all of their outputs, for example SGN expect to miss their target for Tier 1 mains replacement over the RIIO-2 period and missed their unplanned interruption target in 2023.

Building on RIIO-2 performance

We have established a track record and the benchmark as a force for good in RIIO-2, and want to leverage and build on this success for those who need support in RIIO-3

- We have looked after those in the most vulnerable situations, and created the benchmark of how we as gas distribution network owners can help those most in need through the unique interactions we have with our customers.
- We have established a sector leading Vulnerability strategy **(Appendix 16)** with a track record of thought leadership and an approach which is delivering new and enduring innovations.
- We have led the development of a cross-industry single Priority Services Register and pioneered an award-winning school education programme highlighting awareness of the dangers of carbon monoxide (CO) to hundreds of thousands of families.
- We have created over 350 Centres for Warmth see Case study 9 on page 60, established pioneering Services Beyond the Meter **(Case study 3, page 37)** which are now being rolled out across our networks, and we led in supporting Ofgem on the repurposing of the Vulnerability and Carbon Monoxide Allowance (VMCA) which has enabled even greater social return to be delivered and real money to be saved by consumers.
- This is all further enhanced by our investors directly reinvesting profits into the Cadent Foundation which is delivering further support to the communities we serve (at a scale unparalleled in the energy sector).
- We want to build on this and enhance how we deliver our and other services to help those most in need and ensure they are protected in the energy transition and make the right long-term energy choices.

Figure 9: We have developed a track record for turning innovation and leadership into action



We are also setting the standard for our ambition and action towards sustainability.

› We set out a wide-ranging Environmental Action Plan for RIIO-2 and are delivering well against the stretching targets set. For example, Figure 10 shows how we are setting the standard in the progress we have made in reducing the environmental impact of our vehicle fleet. Around 50% of our emergency response workforce are now in zero-emissions vehicles despite this being more expensive than the allowances we had received.

Figure 10: We are leading the sector in zero emissions commercial fleet roll out, achieving 49% of the period target, with other GDNs only achieving 2% combined

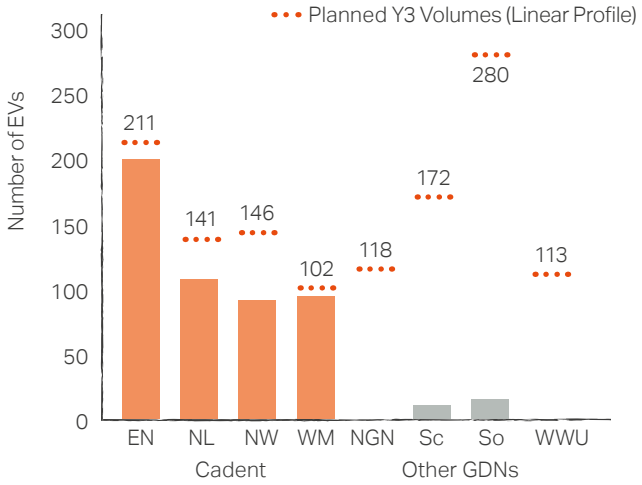
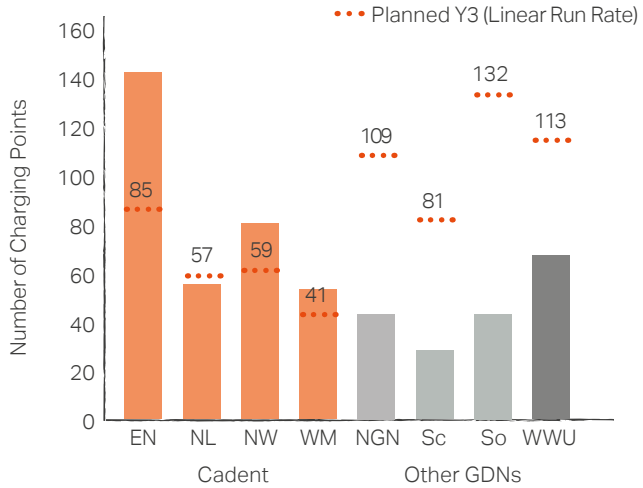


Figure 11: We have also successfully rolled out EV charging points



Case study 1: Electric vehicle fleet

We stated our ambition in our RIIO-2 business plan (Environmental Action Report) to move to a model where all of our emergency response engineers drive zero-emission vehicles by 2026.

We achieved 97% zero-emissions across our company car fleet by 2024. However, technology and charging infrastructure constraints have meant that we have not quite kept up with our ambition for emergency response vehicles. Nevertheless, we have made excellent progress during the period.

In 2023/24, we deployed a further 473 (c.20%) First Responder Electric Vehicles (EVs) across the networks, meaning that we now operate with more EVs than petrol or diesel vans across our entire first operative fleet.

Converting all first-call responder vans to electric vehicles or other zero-emission equivalents will save 4,000 tCO_2e per year, contributing towards our carbon neutrality targets.

Customer and stakeholder insights

We have continued to engage with customers and stakeholders to inform the proposals within our plan.

Rather than stop our customer and stakeholder insight work after the RIIO-2 determination, we felt it was critically important to maintain and build our work in this space. This has included maintaining our regional customer forums and the completion of six-monthly 'temperature checks' to track how preferences and priorities have shifted over time.

As we look forward, especially in relation to the future role of the gas network, there are key questions that need to be answered, many of which relate to customer attitudes and behaviours that are intrinsically difficult to predict. We have taken the responsibility to lead on a number of innovative thought leadership projects, examining complex topics, such as the dynamics between sustainability and affordability, focusing on societal challenges being faced today and those emerging as the UK's energy transition progresses.

Turning insight into action

The ongoing insight generated has allowed us to adapt business processes and priorities during the RIIO-2 period (e.g. our increasing use of the Vulnerability and Carbon Monoxide Allowance (VCMA) to support the rising numbers of customers in fuel poverty) and also develop our RIIO-3 plans with a high degree of confidence.

Nevertheless, we have enhanced our engagement process over the past 18 months to test our understanding and delve more deeply into areas where options exist to do more, to do less, or to operate differently.

We established our new Customer Challenge Group[2] in 2023, which has undertaken the role of Independent Stakeholder Group

We met with the CCG 15 times throughout the development of the plan which was further supported by the creation of eight 'buddy groups'. This included a specialist 'engagement buddy group' which met 20 times. This subgroup focused on the following areas:

- The design of the overall approach to our insight and engagement plan (as described above including the principles, the groups, the methods).
- Guardianship of the principles (especially where we did and did not invest in research).
- Exploring collaboration initiatives with the other gas distribution networks in the absence of an Ofgem engagement working group.
- Detailed review of question guides for the larger studies such as willingness to pay, the targeted research and affordability and acceptance testing.
- Scrutinising the population of the Stakeholder engagement and decision log **(Appendix 11)** to ensure insight had informed decisions.

We worked with our CCG to develop a set of criteria to design the enhanced engagement programme against.

These principles include engaging to seek insight on policy areas that could i) truly be influenced, ii) where optionality existed, iii) where topics could be understood, iv) where genuine customer value was generated as a result and v) ensure that we did not unnecessarily redo research completed during RIIO-2.

In addition to having a set of principles, we also used the clearly defined approach developed in RIIO-2, which ensures that we utilise data and information from a range of sources, identifying where potential insight gaps exist, and using one or more research techniques to close the gaps.

We focussed on key topics where there was a high impact to customers (and key stakeholders) and where we had gaps in our knowledge. This meant that we were able to engage more forensically on a smaller number of targeted areas where optionality existed.

Customer Challenge Group

2. Our Customer Challenge Group (CCG) fulfils all the requirements of Ofgem's defined Independent Stakeholder Group (ISG) so the terms are interchangeable throughout this document.

Customer and stakeholder insights

Customer and Stakeholder Insights have informed our business plan decision making

Insights from our customer and stakeholder engagement programme have been used to inform and test the proposals in our business plan.

- There is a page at the start of each of the following chapters summarising how we've used and responded to insights in that area of our plan
- Our Stakeholder engagement and decision log, captures a summary of who we have engaged with, what they have told us and how we've triangulated insights to feed into our decision making process; ultimately resulting in proposals throughout our plan
- We have worked with expert research partners including Savanta, DJS, Nera, Verve and Thinks Strategy and reports from our studies are available on our website

We have used insights to understand customers' hierarchy of needs

We set out the five key insights on page 6 of this plan, and they, along with our wider enhanced engagement programme has helped us to test if the customers' hierarchy of needs, that we developed during the RIIO-2 business planning process remains valid. At a macro level it does. Safety, resilience and network reliability remain the primary focus of customers, with resilience rising in prominence, largely as a response to the war in Ukraine. As we move up the hierarchy, customers expectations on customer service continue to increase (as they experience the results increasing services levels from other sectors).

Towards the top of the hierarchy, customers, especially ones more informed about Cadent, expect additional support for customers in vulnerable situations, and are willing to pay for even more in this space. There is also a general expectation that we have strong environmental commitments that we must achieve, especially amongst younger customers. The figure below shows our customers' hierarchy of needs, summarising the key insights generated and linking to areas of our plan where the impact from this insight can be seen.

Figure 12: We have engaged with a diverse mix of customers

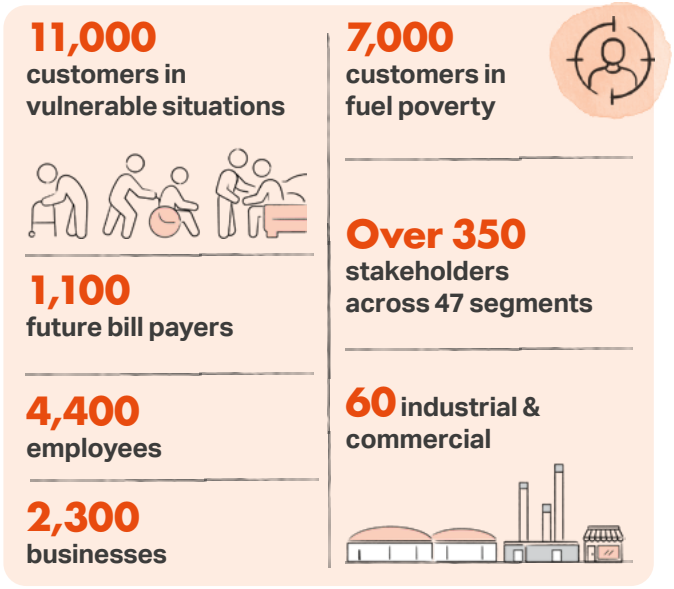
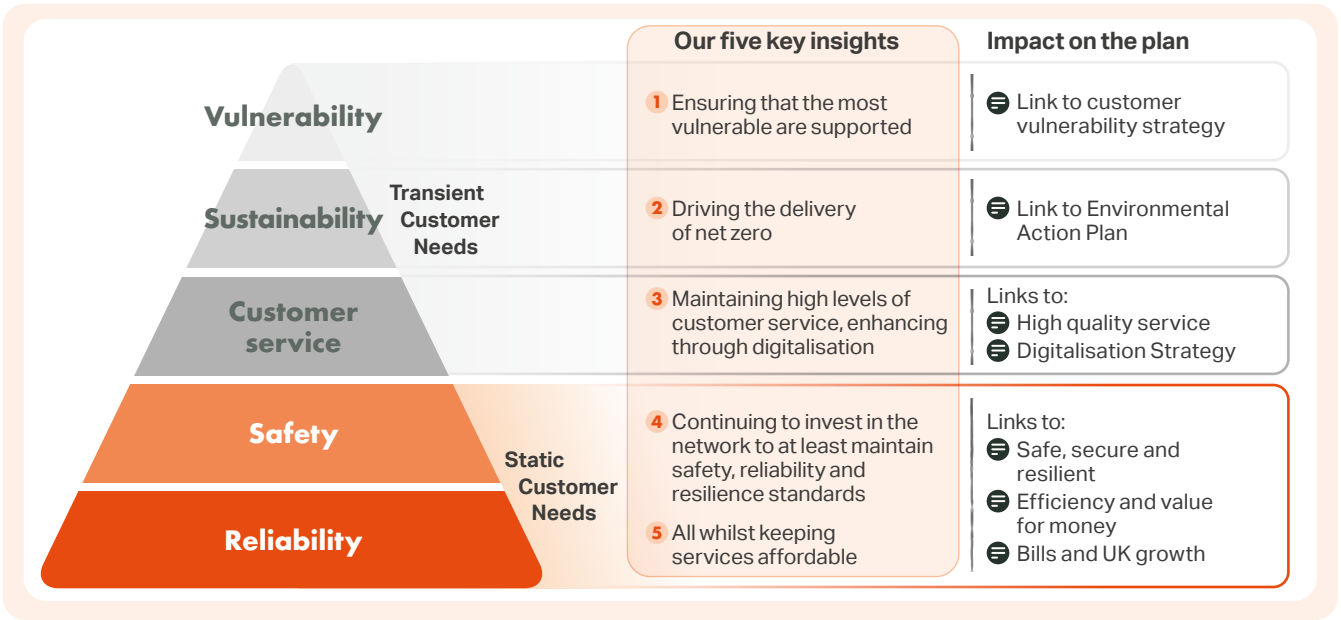


Figure 13: We have tested our key insights against the hierarchy of customers' needs



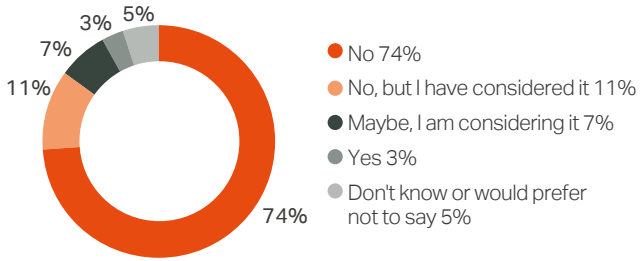
Insights have informed decisions in each areas of our Plan

Safe, secure and resilient supply

Our proposals to continue to invest in our networks are backed up by robust feedback from a range of thought leadership and customer research projects.

Through willingness to pay (stated preference) and targeted research, we asked 12,900 customers if they were planning to change their heating system in the next 5-7 years, to deepen our understanding of planned exchange cycles during the price control. Only 3% agreed that this was in their plans versus 74% who are not even considering it, which supports what we are seeing today, with boiler replacements and new gas connections continuing to increase in RIIO-2.

Figure 14: Only 3% of customers are planning on changing the way they heat their homes in the next 5-7 years



Are you planning on changing the way you heat your home in the next 5-7 years?

In addition, we partnered with the research company Verve to examine the factors that must be in place to enable large scale changes, such as the energy transition. Working with academics across Europe, the study concluded that change will only happen where there is strong leadership, robust infrastructure and clear, compelling communications. Through both qualitative and quantitative research, we have demonstrated that these are deemed to be missing in the UK at present.

We also recently completed further study, working with Savanta, examining customers' attitudes towards 'choice'. Whilst this resulted in a very rich picture of customers' thoughts, the overriding conclusion from the study is that customers expect they have a choice over the technology they use to heat their homes and feel very strongly that decisions are not forced on them.

Infrastructure for net zero transition

Over 50% of our customers say that they are concerned about climate change and more than 70% support the Government's net zero target. However, 74% go on to explain that they believe that they are taking all of the actions that they can afford to take, with the vast majority of these actions being relatively small in terms of impact (e.g. recycling at home). They expect large scale environmental improvements to be delivered by the Government and large companies such as Cadent.

We worked with our Sustainability Challenge Group (SCG) to prioritise actions within our Environmental Action Plan that focus on interventions with the greatest environmental impact. For us, that means reducing methane leakage and we have triangulated customers' willingness to pay (generated through a study with Nera in 2024) with a range of expert stakeholder input (e.g. Carbon Trust, Environment Agency and our SCG) and societal benefit considerations to inform our proposed Advanced Leakage Management Approach, which is explained in more detail on page 45.

High quality service

We explored this outcome area in detail through our regional customer workshops, which we ran across late 2023 and into 2024. As customers become more aware of the service standards we provide, especially through deliberative research methods, they almost universally agree that we are delivering a very positive customer experience. This is very much backed up by our customer satisfaction scores. Our proposals not to change the existing customer satisfaction and complaint handling incentive mechanisms are consistent with this feedback.

Foundations into plan actions

Through willingness to pay testing, we assessed whether customers would support an enhancement to our unplanned interruptions performance levels. We found that 4% more customers would actually prefer to pay less for longer interruption periods than pay more for shorter interruptions, with the vast majority supporting the existing standards, which we have proposed. However, through the same research, over 80% of customers were willing to pay more for Cadent to deliver even more to support customers in vulnerable situations, across all four focus areas of our customer vulnerability strategy.

This is very much consistent with expert stakeholder feedback, with events such as our Customer Vulnerability Conference in October 2024 demonstrating the hugely beneficial outcome of our utilisation of the VCMA fund. Over 75% of customers ranked 'minimising disruption' as a major factor in how they perceive our customer service.

Cadent's customer vulnerability conference

There is large scale support for our collaborative streetworks initiative in Greater London Authority areas, with leaders across Local Authorities across our network writing to support its extension into their areas.

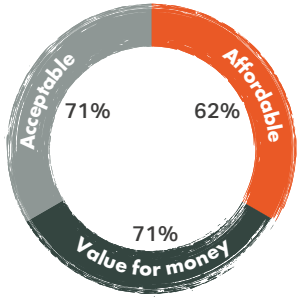
Efficiency and value for money

Customers generally see our plan as acceptable, despite bills increasing over the RIIO-3 period. Whilst there is some variation across our networks, at a Cadent level, 71% of customers accept our business plan proposals, believing them to represent 'value for money'

This compares with an 83% acceptability score for our RIIO-2 plan, but it is important to note that our bill impact was reducing at that time and the economic challenges brought by the response to the COVID-19 pandemic and the war in Ukraine has not been seen.

Figure 15 shows the RIIO-3 plan results comparing perceived acceptability, affordability and value for money. Whilst minor differences were seen across regions and customer demographics, high levels of acceptance were consistent throughout.

Figure 15: Customers surveyed in acceptability and affordability testing see our plan as value for money



Core Study
(Cadent bill impact only)

Triangulating our insight results to inform our plan proposals

When triangulating the data, we have applied different weightings (of alternative sources of insight) depending on the topic area. For example, in relation to asset maintenance and safety, we have placed a very high weighting on inputs from the HSE, whereas in the vulnerability space we have largely used expert stakeholder insight, along with customer feedback and our extensive RIIO-2 delivery experience to shape our proposals. The relative weightings are shown within our Stakeholder engagement and decision log (Appendix 11).

Safe, secure and resilient supplies

We have set out a plan to deliver a safe, secure and resilient network. The plan covers iron mains replacement, asset health, major capital projects, and emergency and repair including services beyond the meter to support customers' in-home safety.

We outline plans for resilience relating to cyber and physical security, climate change and our workforce and supply chain. We have identified where plans are a continuation from RIIO-2 or a new output using these icons: » *Continuation* ✦ *New or enhanced*

In this section

Primary references to other parts of the plan

Appendices

- Appendix 2: Climate resilience strategy
- Appendix 4: Cyber Resilience Business Plan
- Appendix 6: Environmental Action Plan
- Appendix 10: Network Asset Management Strategy
- Appendix 17: Workforce and supply chain resilience strategy

Investment decision papers

- Online document library for Investment decision papers

Supporting documents

Appendices

- Appendix 3: Cost assessment and benchmarking approach
- Appendix 8: Innovation strategy
- Appendix 9: IT & Telecoms strategy
- Appendix 11: Stakeholder engagement and decision log
- Appendix 14: Digitalisation strategy
- Appendix 15: Digitalisation action plan

Shaping our plan – insight to ambition

Safety and reliability are the core needs of our customers

Delivering a safe, reliable and resilient network continues to be the core and most important need from our customers (both domestic and commercial), as shown by the outputs from our insight work in Figures 13 and 16.

This is a must-have 'hygiene factor' from a gas distribution network and, along with our analysis and insight on customers' lack of willingness to change their heating appliance[3], suggests a role for gas distribution networks for several decades to come whatever the pathway to net zero. Hence, ensuring we are able to meet this core need of a safe, resilient and secure network is the bedrock of our plan.

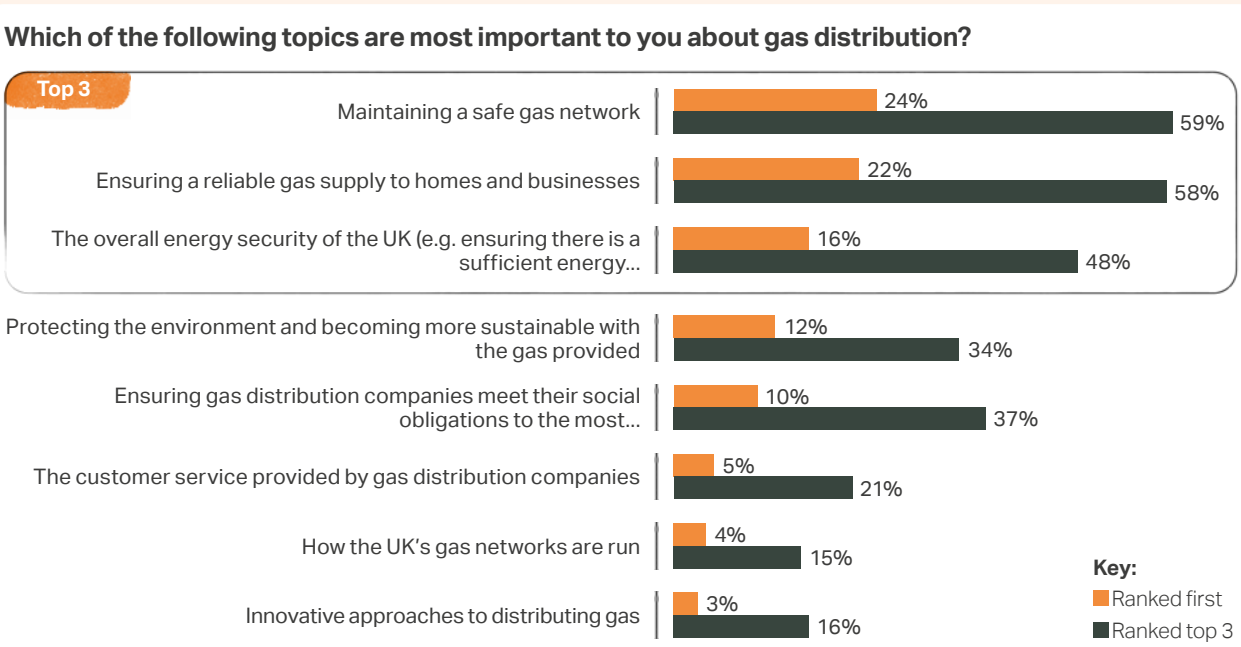
Our Safety Case and legal responsibilities

As well as our customers' stated preference for a safe, secure and reliable network, our requirements in this area are underpinned by legislative requirements to safely transport gas to domestic and industrial premises under our Safety Case which is regulated by the Health and Safety Executive.

Our safety case ensures that we comply with all relevant safety legislation, including the Pipelines Safety Regulations (PSR), Gas Safety (Management) Regulations (GS(M)R), Pressure Systems Safety Regulations (PSSR), Control of Major Accident Hazards Regulations (COMAH) and the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

Predominantly, given a relatively stable customer base, our workload requirements and investment plans to date have been non-load related in nature and we expect this to continue into RIIO-3, with some specific considerations with regard to potential future net zero pathways which we have highlighted such as reductions in connections.

Figure 16: Safety and reliability are the two highest customer priorities – followed by security



3. Output from surveying 12,900 customers across the Cadent network including fuel poor and customers in vulnerable situations in 2024.

The Iron Mains Risk Reduction Programme

A large driver for our activity in this area is the mandated Iron Mains Risk Reduction Programme (IMRRP). This requires us to have an approved programme to replace specified iron mains and associated service pipes within 30 metres of property by 2032 (referred to in the programme as Tier 1 (all pipes up to 8" in diameter) and Tier 2A (pipes 8" to 18" over a predetermined risk threshold)). This is replacing all types of iron pipes with polyethylene pipes. In addition, we are required to have a maintenance and remediation process in place for other iron mains pipelines, typically of larger diameters greater than 8" which do not exceed the risk threshold (referred to as Tier 2B (8" to 18" pipes) and Tier 3 (~>18" pipes) in the programme). Typically for the non-Tier 1 assets, this takes the form of cost benefit analysis to determine the appropriate maintenance versus replacement option.

The IMRRP is also supported by our broader requirement to maintain a 24 hour, 365 days a year emergency response service to suspected gas leaks or presence of carbon monoxide. We operate the National Emergency Gas Service call line on behalf of all the GB gas transporters and have an emergency and repair workforce across our networks to respond to reported emergencies as soon as possible and to repair escapes as soon as reasonably practicable.

Interaction with reducing the impacts of gas leakage

Whilst the IMRRP is a critical safety programme it also delivers a significant environmental benefit of reducing leakage of methane to the atmosphere. Our Environmental Action Plan **(Appendix 6, page 11)** sets out more detail on our ambition to further reduce leakage in RIIO-3 with a defined advanced leakage intervention programme, for which we show the additional benefits that would be achieved.

Asset health considerations to ensure safe and reliable transportation

Our asset management strategy in RIIO-2 and before aimed to keep pace with the deterioration of our transportation network to maintain the exceptional levels of reliability that our customers expect (99.99% reliability).

During RIIO-2, we have embedded significant improvements in our asset management capability, which has informed our investment decisions within our RIIO-3 submission. The RIIO-3 plan has leveraged:

- **The improvements to asset data**, through a comprehensive review of asset data quality. We have developed a tool which has consolidated all our static asset data (at a component level) and condition data into one single location.
- **The significant investment in extending our risk and deterioration models** (the use of our Asset Investment Manager (AIM) software), based on the principles of the Network Asset Risk Metric (NARM) methodology.
- **The leakage model development:** We have refined our pipeline deterioration models through gathering empirical data from leading edge sensor technology. This will help us more effectively target pipelines at greatest risk of leakage.
- **The updated and refined service risk framework** and will build upon NARM methodology for all other network assets giving us a common risk currency.
- **The development of a unit cost workbook.** We have used the out-turn costs within our financial systems, for all RIIO-2 work delivered, to inform a robust set of unit costs.

We have delivered some major programmes in RIIO-2 as part of our NARM commitments and we have delivered interventions against emerging trends not funded in RIIO-2 such as a widespread governor improvement programme.

Our plans for RIIO-3 aim to address the highest risk and critical assets in the most effective way. Our plans are captured in specific **Engineering Justification Papers (EJPs)** or are contained in the NARM framework which defines the outputs we are committing to deliver in RIIO-3.

Across our network we face some specific asset management challenges such as a uniquely large proportion of Multi-Occupancy Buildings (MOBs) in our London network.

These assets face specific challenges in terms of the complexity of interventions and the disruption and impact caused by any interruptions, and hence we have developed specific repair and operational techniques through innovation, such as the innovative repair technique 'Nuflow', to aim to maintain supplies as much as possible. We also have dedicated maintenance and replacement regimes in place which are building on the surveying regime and high-rise building plans we have developed through RIIO-2.

Emerging resilience threats

We have also seen the need to deal with the emerging threats of 1 cyber and physical security, 2 climate change and 3 workforce and supply chain capability risks.

1. As an operator of essential services, we have obligations under the Network and Information Security Regulations. We also have physical sites which are designated as Critical National Infrastructure. These obligations require us to implement appropriate and proportionate control measures to protect our assets and people from physical and cyber threats.
2. We have been evolving a climate resilience strategy **(Appendix 2 – Climate resilience strategy, page 16)** to address the emerging changes in the natural environment. To date we have largely been reacting to mitigate increased flood risks and damage caused by ground movement and third-party assets such as water pipes. Our plan for RIIO-3 looks to create metrics and data to enable a more proactive forward-looking strategy to pre-empt further climate related risks.
3. We rely on our workforce and supply chain to deliver and maintain the resilient service our customers rely on.

Our Workforce and supply chain resilience strategy **(Appendix 17, page 22)** highlights the areas where we have focused plans to ensure we can meet emerging threats on maintaining key skills and deliver efficiently.

Changes in our customer requirements

Whilst, as we noted above, we expect the network requirements to be largely unchanged for the RIIO-3 period, there are some specific areas of evolution that our plans are looking to accommodate.

Domestic connections/disconnection – We anticipate a slow down in domestic connection volumes over the RIIO-3 period and an increase in domestic customers seeking to disconnect from the network due to installation of alternative forms of heating (such as heat pumps). The level of this change is highly uncertain so we have proposed an uncertainty mechanism to manage that volume uncertainty.

Biomethane connections – our Environmental Action Plan **(Appendix 6, page 30)** sets out the potential for a significant ramp up in biomethane production looking to connect to the network hence a need to create capacity for this low carbon gas to enter.

Supporting the electricity power system – we have 188 power stations currently connected with a total capacity of over 2.3GW, a small number on our high-pressure network, but the vast majority embedded well within the network in the medium pressure tier. These plants play a key role in providing dispatchable generation to support the electricity grid and hence we need to ensure a resilient service. We anticipate 15 new power station connections per annum over RIIO-3.

Diversions – We expect to continue to recieve requests from third parties for a material amount of pipeline diversions over RIIO-3 given the significant scale of other ongoing UK infrastructure developments such as HS2 and other transport upgrades, water infrastructure changes and the increasing new electricity infrastructure.

Supporting improvements in safety in the home – our plan also looks to support customers in vulnerable situations who, as a result of being in fuel poverty, are not able to fund appropriate maintenance and servicing of their in-home gas appliances. Our emergency response engineers have also confirmed this increased risk in their visits and through a rise in the support being sought through our Services Beyond the Meter programme. We have also seen a 38% increase in reported gas theft across our networks. Theft, by its nature, increases the risk of non-qualified work being done, endangering safety. We are proposing a new output to undertake further research and create a blueprint for what services could be provided by GDNs to support safety in the home.

Key proposed plan commitments

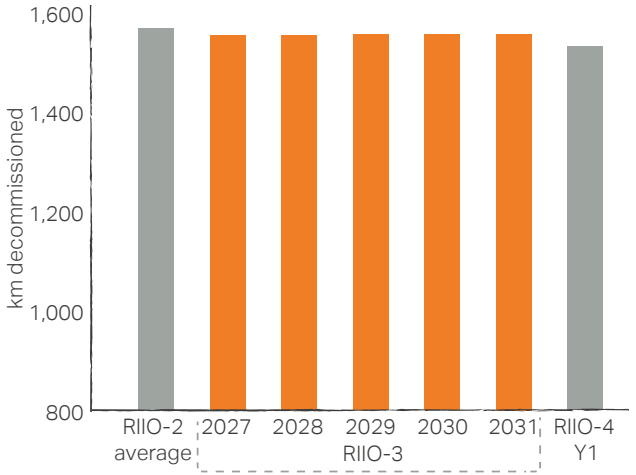
A1 Iron Mains Risk Reduction Programme

Over 7,700km of Tier 1 iron pipes and associated services within 30 metres of a property will be replaced plus a 6km baseline of Tier 2A expected replacement, maintaining over c.6,000 jobs across our regions

Continuation from RIIO-2 and mandatory

- The Iron Mains Risk Reduction Programme will continue to address the impact of the deteriorating metallic network and upgrading this to a safer, more secure, affordable and sustainable polyethylene network. Our plan sees us deliver a steady annual workload, similar to RIIO-2 levels, across all years of the RIIO-3 period and one year into RIIO-4. This would aim to complete the programme in April 2032 and would leave some contingency if any unforeseen changes occur prior to the statutory programme end of 31 December 2032. Hence, this will see us completing approximately 83% of the remaining workload in RIIO-3.
- The work mix for the next period will contain larger diameter pipe (such as 6" to 8") and fewer smaller diameter pipe (2" to 5") than RIIO-2. In addition, the average complexity of the remaining work is increased from RIIO-2 and we have analysed the impact of this against many factors such as the remaining pipes' proximity to schools and roadways. The cost impact and how we are mitigating this is discussed further in the System efficiency and long-term value for money chapter.
- The HSE is also reviewing the risk threshold for mandatory replacement of Tier 2 assets (8"-18"). We have included our estimate of workload against the current risk threshold and have propose that the existing RIIO-2 volume driver has the flexibility to adjust for uncertainty in these volumes.
- The programme continues to support over 5,000 jobs across the supply chain throughout our network geographies on top of c.1,000 of direct employees.
- Through our Workforce and supply chain resilience strategy (Appendix 17, page 23), we have engaged early with the suppliers to ensure they are sighted on the volume and nature of the work required, such that we can ensure the skills are in place and we can deliver the programme efficiently.

Figure 17: We are maintaining a similar level of Tier 1 mains replacement in RIIO-3
(1,554km p.a. average over RIIO-3)



A2 Asset health and resilience

A2.1 Network Asset Risk Metrics (NARM)

An optimised asset health intervention plan to prioritise the riskiest and most critical assets. Keeping monetised risk broadly neutral by the end of RIIO-3 for those assets covered by the Network Asset Risk Metrics

Continuation from RIIO-2 but with different asset priorities

Our plan sets out a series of targeted asset health interventions on the major asset groups to ensure we can meet our legislative requirements and deliver value for money by choosing the right blend of options.

The NARM framework, originally introduced by Ofgem for RIIO-2, is used to measure asset health at a detailed level for a range of assets across our networks by expressing plans in terms of monetised risk, and set our regulatory outputs.

To leverage our improved insight, data and analytics across our networks for our RIIO-3 plan we have built on the principles of NARM internally to understand asset health at a broader and more holistic level than we have ever had (this is covered in (Appendix 14, INV-03, our Digitalisation strategy page 32). This has allowed us to identify and prioritise required capital works to ensure safety and security of supply, whilst also considering cost-benefit trade-offs. We have also combined the analysis from advanced leakage detection into our considerations. Our plan to establish a Digital Platform for Leakage Analytics will enhance this further.

Table 2 shows the change in underlying asset health (as measured in NARM monetised risk £Rm) if we make no interventions in RIIO-3, and then the impact of the interventions in our RIIO-3 plan.

Asset health risk would rise by 12% if no interventions were made. However, it is expected to reduce by 13%, through our proposed plan interventions through capex and repex investment. The table shows that our proposed capital interventions hold underlying risk net neutral but risk is reduced through our proposed repex interventions, This is driven by the advanced leakage intervention programme discussed in section A2.2 and some of the major projects discussed in sections A2.3-A2.8.

Table 2: Asset health risk (NARM) will reduce due to more optimised repex interventions in RIIO-3

Monetised Risk (R£m)	RIIO-3 start position	RIIO-3 end position without intervention	Change in underlying monetised risk	Percentage change	RIIO-3 end position with proposed interventions	Change in underlying monetised risk	Percentage change
Cadent Total	846	949	104	12%	738	-108	-13%
Sub-category							
Capex Assets	266	295	29	11%	267	0	0%
Repex Assets	580	654	74	13%	471	-108	-19%

A2.2 Advanced Leakage Intervention Programme – workload

A targeted 750km Advanced Leakage Intervention Programme to deliver a 10% additional reduction in methane leakage, and addressing safety and reliability risks from these assets (see case study 5 on page 46)

New for RIIO-3 and industry first

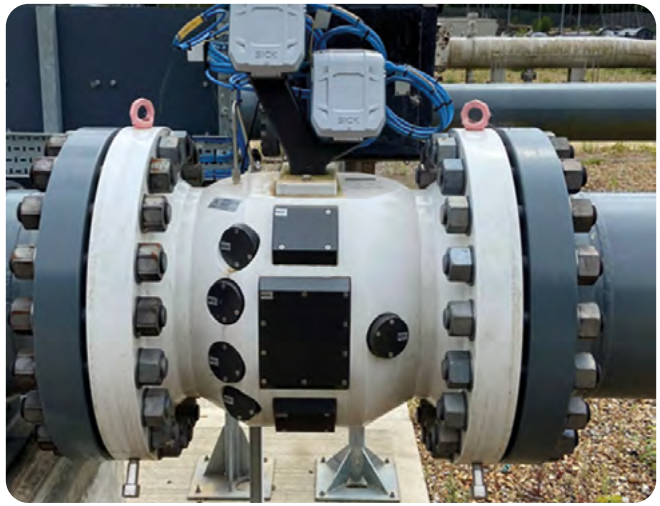
- We have a responsibility to ensure the safe condition of all of our mains including mains outside of our Tier 1 programme (both large diameter iron and steel, and iron >30m from a property). Our ALIP has been driven from data from our BAU RIIO-2 innovations, gathering data from new vehicle mounted sensor technology. This will identify our most leaky mains and allow us to address both the environmental and safety risk in a more proactive and controlled way.
- This supports our aspirations of best in class asset management and fully aligns with the HSE's interim conclusions from its recent review which would require us to roll out advanced leakage detection and management across all of our metallic mains. The environmental benefits of this programme are set out in the Environmental Action Plan Appendix 6, page 11 and in our Investment decision packs.
- A further benefit of this programme will be to maintain and expand competence for replacement work on large diameter assets which is rapidly declining across the industry. This will be needed for any future energy pathway, whether repurposing or decommissioning the pipes at a later date.

A2.3 to A2.8 Major resilience projects

Six major, or unique projects and programmes to deliver cost beneficial interventions to address key asset health or resilience risks across our networks.

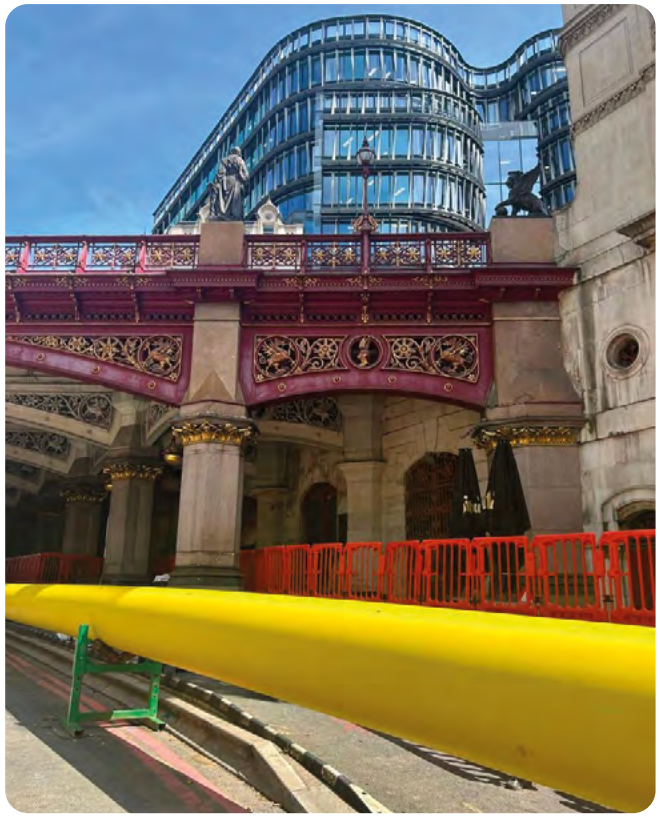
Continuation from RIIO-2 but with some new projects

We have identified six major projects that are either (>5m) or unique in nature across our networks, which show a positive cost benefit to address specific asset health and resilience risks. These are summarised below and further detail can be found in (our Investment decision packs).



Ultrasonic meter (A2.5)

Tinsley viaduct (A2.4)



London medium pressure project (A2.3)

Table 3: We have six major resilience projects spanning our networks, including work that rolls on from RIIO-2 and new projects

Ref.	Project & Network	Description	Cost Forecast
A2.3	**London Medium Pressure** NL	**Continuation** of RIIO-1 & 2 programme to address resilience of the North London network	£89m
A2.4	**Tinsley Viaduct Diversion** EN	**New project** to address failing IP pipeline beneath the Tinsley M1 Viaduct – RIIO-2 identified project	£29m
A2.5	**Flow Weighted Average Calorific Value Compliance** ALL	**Continuation** of fiscal metering programme addressing metering obsolescence & risk	£56m
A2.6	**Capacity Upgrades** ALL	**Continuation** of Network Capacity upgrades	£20m
A2.7	**Grays Medium Pressure** NL	**New Project** to address steel medium pressure network.	£25m
A2.8	**West Winch Pipeline** EN	**New Project** to address deterioration on LTS pipeline with single source of supply	£11m

A3 Climate resilience

A climate resilience strategy to protect against increased flood risks and more extreme weather patterns, with climate scenario planning, adaptation pathways and metrics and indicators established

New for RIIO-3

- We have initiated work on climate resilience work during RIIO-2 through our involvement in the cross-sector Climate Resilience Industry Working Groups, but our understanding of **long-term** climate science and the associated risks is at a formative stage and our work has largely been on short-term risk and preparedness to become 'reactive by response'.
- Our strategy is designed to ensure our capabilities mature in managing long-term climate risk, with an ambition to transition towards a proactive 'resilience by design' position in RIIO-3.
- We will develop risk modelling capability by the mid-point of RIIO-3 to inform enduring investment programmes. We will use this to develop robust adaptation pathways to respond to climate risks and build metrics which provide the rationale for investment. Towards the end of RIIO-3 and into RIIO-4 we will evolve our climate risk assessments to reflect all climate risks, to reflect changing climate science, and to better understand industry interdependencies and cascading risks.
- We will deploy our adaption pathways in two ways:
  - Iterative deployment via our engineering and investment frameworks.
  - A programme of critical adaptions for assets exposed to unacceptably high climate risk. We intend to use an uncertainty mechanism for this work and have proposed a revision to the broader resilience mechanism set out in Ofgem's Sector Specific Methodology Decision (SSMD).
- There are four key areas of investment in our plan which have an incremental cost. They are:
  1. Investment in IT system enhancements and asset data collection.
  2. 3D asset data for data analytics to improve the accuracy of climate risk modelling.
  3. Development of asset risk modelling capability, encompassing tools and critical resources.
  4. Resources to manage our engineering adaptation response.

Preventing flood risks

We routinely carry out vantage site surveys at strategic sites across our networks, where we have identified potential risks as a result of climate change.

The images here show a high pressure pipeline, running from Warthfold to Middleton in our North West network immediately after a period of heavy rainfall and following a permanent reinstatement of the bank using a combination of willow matting, reinstatement of the bank and pipeline cover and then rock blanketing of the bank to prevent further erosion.

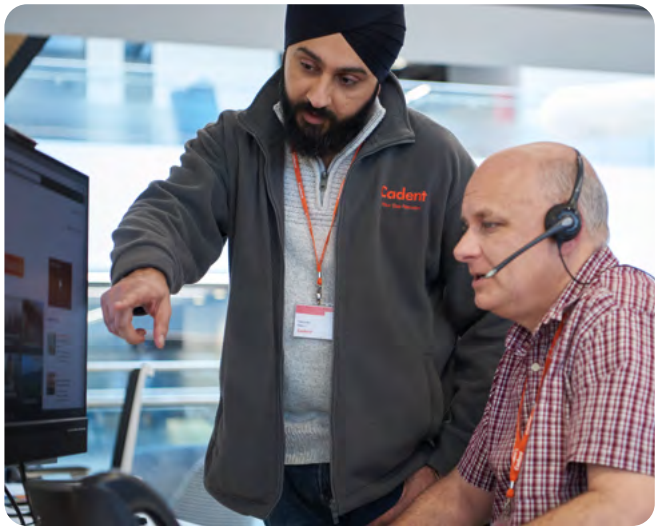
The work involved extensive engagement with the Environment Agency, the use of specialist diving contractors and complex stress analysis to determine the risk to the pipeline at frequent intervals during the remediation works.

A4 Physical and Cyber Resilience

An information and operational technology programme to effectively maintain cyber and physical security (in line with the Enhanced Cyber Assessment Framework requirements and the physical security requirements for defined Critical National Infrastructure)

Continuation from RIIO-2 but with different projects

› We set out our plans to meet the enhanced profile of the Cyber Assessment Framework to manage cyber and physical security. The plans reflect the risk assessment of critical systems and processes under the Network Information Security Regulations and DESNZ's requirements for physical security around designated Critical National Infrastructure.



A5 Workforce and supply chain resilience

Strategy and development of workforce and supply chain metrics

New for RIIO-3

› Appendix 17, page 23 Workforce and supply chain resilience strategy reflects the challenge of managing uncertainty in the future role of the gas network and changes in the nature and volume of work required. For example, the need for work on larger diameter pipe work, the plan targets protecting skills and jobs, and managing the supply chain competition challenge with competing infrastructure requirement of water, transport and electricity upgrades. In addition, it looks to ensure the necessary cyber and digitalisation skills (including the need for electrical and instrumentation skills). We are also building the workforce of the future to transport biomethane, hydrogen and other low carbon solutions. We will continue to drive economic growth and productivity in each of the regions we operate in.

› To address critical skills gaps, we will attract new talent and have specific actions to retain our talented employees. Our award-winning Future Talent programme removes traditional barriers to entry, whilst our employee value proposition (developed by considering employee feedback) ensures that we identify critical skills and provide targeted development to strengthen capability internally.

› Our strategy also contains ambitious targets on continuing our progress on improving Equity, Diversity and Inclusion within Cadent and as part of the wider sector. We have made some fantastic progress as shown in the Case study 2 on page 36 but there is more to do.

Maintaining our world class levels of safety for our employees, supply chain partners and members of the public and demonstrating effective process safety management

› We will maintain our position of safety excellence within the utilities sector reflected in our recognition of Gold status from the Royal Society for the Prevention of Accidents and an upper quartile GRESB[4] benchmark rating

› We will maintain our focus on reducing and proactively preventing lost time injuries, electricity cable strikes, road traffic accidents and member of the public injuries. We will support the physical and mental well-being of our colleagues and incorporate the latest guidance and best practice from the HSE regarding fatigue management.

Note there are no measures or commitments proposed for this action area as it is covered and monitored by the HSE.

4. GRESB – Global Real Estate Sustainability Benchmark.

Case study 2: Enabling everyone to thrive

We pride ourselves on being a fair, respectful and inclusive place to work, where all our people feel they belong. We have a number of well-established employee communities covering gender, ethnicity and religion, disability, the LGBTQ+ community, grief support and military colleagues.

Alongside our communities, we also run three priority working groups focusing on inclusive leadership, anti-racism and fair and inclusive processes. These include members from across our business communities to make sure that action plans benefit all of our colleagues.

Our working groups have supported processes to make these equitable and inclusive, reviewed our leadership development training offerings, and provided many educational resources.

Celebrating successes

We're proud to be:

Armed Forces Covenant Employers Recognition Scheme Gold Award

Disability Confident Leader

Lexxic Neurodiversity Smart Committed

Menopause Friendly and Fertility Friendly employer

Bronze Race Equality Trailblazer

Women in Cadent | Embrace | Cadent Military | Pride at work | Thrive | Grief awareness | M.E.N.

Women in Cadent focus

Women in Cadent (WiC) is a network that strives towards an environment where all individuals are treated fairly and respectfully, and have equal access to opportunities and resources.

We have a 79% male workforce which drives the need for our WiC Network made up by female volunteers. We support and encourage professional development, as well as attracting new talent to help us shape the future. The WiC network is built upon three pillars: flexibility, opportunities for development and growth, and wellbeing. We lead and influence change both internal and external to Cadent across seven sub-groups: Fertility Matters, The Parent Patch, Adoption, Women in Operations, Women in STEM, Menopause Support and Women's Health.

Key highlights

- Updates to our family provisions policies including up to 12 months of fully paid maternity and adoption leave.
- The first utility company to become accredited as a Fertility Friendly Employer with a new policy.
- 44 trained Menopause champions as well as inclusive policies, eLearning and standards.
- New groups created to support STEM, Operations, Health and Adoption.
- Shortlisted at the British Diversity Awards 2024.

A6 Keeping people safe in their homes in an emergency

Maintaining rapid support to customers, responding to emergency calls within 30 seconds (>90%) and attending uncontrolled escape emergencies within 1 hour (>97%) and controlled escapes within 2 hours (>97%)

Continuation from RIIO-2 – Common outputs

- We will maintain an emergency and repair workforce to respond quickly to reports of gas escapes and proactively target repairs of the leakiest pipes.
- For emergency response, we will maintain the annual standard of performance in our licence and, as directed, report monthly performance through the annual Regulatory Reporting Pack (RRP).
- **Note**: Under the Gas Safety (Management) Regulations, we have to stop escapes within 12 hours unless it is not 'reasonably practicable' to do so. The HSE has oversight of this obligation and measure so, as in RIIO-2, we do not believe a RIIO output is necessary for repair times.

Creating and trialling a Services Beyond the Meter blueprint for GDNs to support improving safety in customers' homes and managing the energy transition

New for RIIO-3 and industry first

We will continue to expand the services that we provide to customers who are specifically in vulnerable situations, that extend beyond the meter, into customers' homes (Case study 3 below). We will combine the lessons learned from projects funded through the Vulnerability and Carbon Monoxide Allowance (VCMA) and the Cadent Foundation. (See our Stakeholder engagement and decision log, Appendix 11, row A6)

We will overlay these with insights generated through a series of primary customer and stakeholder research initiatives that gather new information relating to present and future customers' needs, with a particular focus on the relationship between vulnerability, fuel poverty and gas safety, considering the changes in forms of heating and resultant changes in energy costs that will arise from the energy transition.

Given the importance placed on this by our customers and a significant proportion of our external stakeholders, **we will absorb the costs of completing the study and trial** and generate the 'blueprint' into our base cost allowance, sharing the results with Ofgem and other GDNs, with recommendations for their application across the sector in RIIO-4.

Case study 3: Services Beyond the Meter

The concept of our Services Beyond the Meter programme was identified by a group of our front line engineers, who wanted to find a way to provide additional help to customers that were being left potentially vulnerable without gas.

We have used combined RIIO-2 funding and the Cadent Foundation funding to provide a wide range of services, including to provide a variety of fully funded in-home services, including gas safety checks, repairing and replacing gas appliances and other energy efficiency measures.

Over 10,000

fully funded services, including safety checks, repairs and appliance replacements in 2023/24

Summary of commitments

Table 4: Our output commitments for safe, secure and resilient supplies

◆ Incremental cost/revenue with this output

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/ Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
A1 Iron Mains Risk Reduction Programme											
A1.1	**Tier 1 mains decommissioned**	Common	PCD	Period	km decommissioned	2,723	1,684	1,874	1,491	**7,772**	7,828
A1.2	**Tier 1 services repex**	Common	PCD	Period	no. interventions	227,686	166,687	143,874	127,433	**665,680**	738,129
A1.3	**Tier 2A mains and services**	Common	Volume Driver	Period	km decommissioned	0.63	3.79[5]	1.44	0.18	**6.03**	10.53
A2 Asset Health/resilience											
A2.1	**Network Asset Risk Metric (NARM) – monetised risk (A1 interventions)**	Common	PCD and ODI-F	Period	monetised risk, R£m	14.53	18.27	28.57	10.91	**72.28**	21.42 (not comparable due to methodology change between RIIO-2 and RIIO-3)
	Network Asset Risk Metric (NARM) – long-term risk (A1 interventions)	Common	PCD and ODI-F	Period	long-term risk, £LTRB	423.34	504.69	573.64	274.68	**1,776.36**	New for RIIO-3
A2.2	**Advanced Leakage Intervention Programme – workload ◆**	Bespoke	NARM	Period	km replaced or remediated	263	144	178	165	**751**	New for RIIO-3
A2.3	**London Medium Pressure programme ◆**	Bespoke	PCD	Period	km decommissioned	✗	19.1	✗	✗	**19.1**	9.9
A2.4	**Tinsley ◆**	Bespoke	PCD	Period	km commissioned	1.7	✗	✗	✗	**1.7**	New for RIIO-3
A2.5	**Flow Weighted Average Calorific Value Metering Systems ◆**	Bespoke	PCD	Period	no. sites upgraded	12	4	7	5	**28**	18
A2.6	**Capacity Upgrades >7bar**	Bespoke	PCD	Period	no. sites upsized	0	1	5	2	**8**	13
A2.7	**Grays Medium Pressure programme ◆**	Bespoke	PCD	Period	km decommissioned	✗	42.6	✗	✗	**42.6**	New for RIIO-3
A2.8	**West Winch ◆**	Bespoke	PCD	Period	Repair & feasibility	✓	✗	✗	✗	✓	New for RIIO-3

5. This excludes a small volume of Tier 2A workload in our London network shown in BPDT CV6.02 mains Tier 2A which is associated with our proposed Grays medium pressure programme PCD (A2.7).

Summary of commitments

Table 4: Our output commitments for safe, secure and resilient supplies

◆ Incremental cost/revenue with this output

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/ Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
A3 Climate resilience											
A3.1	**Climate resilience strategy ◆**	Common	LO	Period	Strategy implemented	✓	✓	✓	✓	✓	New for RIIO-3
A4 Physical Security and Cyber resilience											
A4.1	**Physical Security projects ◆**	Common	PCD	Period	No. of projects	1	3	0	1	**5**	2 projects delivered
A4.2	**Cyber Security projects ◆**	Common	PCD	Period	Enhanced profile attainment	✓ 2027	✓ 2027	✓ 2027	✓ 2027	✓ **2027**	Basic profile attainment
A5 Workforce & supply chain resilience											
A5.1	**Workforce resilience metrics ◆**	Common	Reporting only	Period	Metrics introduced for RIIO-3	✓	✓	✓	✓	✓	New for RIIO-3
A6 Emergency service											
A6.1	**Emergency call handling**	Common	LO	Annual	% of calls answered in 30 seconds	>90%	>90%	>90%	>90%	**>90%**	Same standard
A6.2	**Uncontrolled escapes**	Common	LO	Annual	% of jobs attended within 1 hour	>97%	>97%	>97%	>97%	**>97%**	Same standard
A6.3	**Controlled escapes**	Common	LO	Annual	% of jobs attended within 2 hours	>97%	>97%	>97%	>97%	**>97%**	Same standard
A6.4	**Service Beyond the Meter blueprint**	Bespoke	VCMA Action	Period	Write blueprint report	✓	✓	✓	✓	✓	New for RIIO-3

Managing uncertainty and protecting against non-delivery

Uncertainty Mechanisms proposed

There are six common uncertainty mechanisms (specified in the Ofgem's RIIO-3 Sector Specific Methodology Decision) that are relevant to this outcome area.

We are proposing a revised scope for two of these, specifically the Resilience and HSE policy reopeners. In addition, we have specified one bespoke uncertainty mechanism to deal with uncertainty over volumes and costs for London subways and tunnels, and a new common uncertainty mechanism for Tier 1 iron stubs. These are all detailed in Table 5 below and the rationale for the revised scope and bespoke mechanisms is set out in the referenced documents.

Table 5: Summary of uncertainty mechanisms required in RIIO-3 for safe, secure and resilient supplies

Ref.	Area of uncertainty	Proposed mechanism for RIIO-3	Common/ Bespoke	Where discussed in our plan
UM.A.1	Resilience	Re-opener	Revised Common	BPDT M8.14 Commentary section 2.3.2/MJP02 Mandated Category 3 Security/Appendix 2 Climate resilience strategy
UM.A.2	HSE Policy	Re-opener	Revised Common	BPDT M8.14 Commentary section 2.3.1
UM.A.3	Tier 2A Mains and Services	Volume Driver	Common	N/A (We agree with SSMD scope)
UM.A.4	Diversions and Loss of Development Claims	Re-opener	Common	N/A (We agree with SSMD scope)
UM.A.5	Third-party damage and water ingress	Pass-through	Common	N/A (We agree with SSMD scope)
UM.A.6	NTS exit capacity	Pass-through	Common	N/A (We agree with SSMD scope)
UM.A.7	London Subways and Tunnels	Re-opener	New Bespoke	BPDT M8.14 Commentary section 2.3.4/EJP08 Mains Tier 1 (IMRRP) and Associated Services
UM.A.8	Tier 1 Iron Stubs	Volume Driver	New Common	BPDT CV6.11 Commentary/BPDT M8.14 Commentary section 2.2.2/EJP08 Mains Tier 1 (IMRRP) and Associated Services

Ensuring our plan is deliverable

We have tested the deliverability of our commitments in this area, specifically:

1. Skilled resource availability within our workforce as well as across our supply chain.
   - Deliverability and cost efficiency of Tier 1 mains replacement through supply chain competition and contracting.
   - Deliverability and cost efficiency of the advanced leakage intervention programme.
   - Managing specific skills shortage on asset health work such as Electrical & Instrumentation work.
   - Managing skills shortages in cyber security resourcing.
   - Equity, Diversity and Inclusion initiatives.
2. Sufficient access to the network to complete works in the defined timescales.

We have phased works to ensure we can access the network without causing supply disruption and recognising the required build up-of supply chains (for example, we have a gradual ramp up in work in the advanced leakage intervention programme and have phased capacity upgrades across the period). The workloads proposed are built on our experience and strong track record of delivery in RIIO-2.

3. Mitigating cost efficiency risks to ensure affordability.

We have assessed the specific type of work required and have engaged early with our supply chain to establish an efficient plan.

The Workforce and supply chain resilience strategy **(Appendix 17, page 9)** shows how we are mitigating the largest challenge in these outcome areas and this shows how we are mitigating the largest challenges.

Infrastructure fit for a low-cost transition to net zero

We have set out a plan to 'protect the planet' by reducing methane leakage, improve our wider environmental impact and collaborate with others to strategically plan for and facilitate a low-cost transition to net zero.

This is set out in more detail in our Environmental Action Plan (EAP), which has been informed by expert stakeholders and external benchmarks and analysis.

In this section

Primary references to other parts of the plan

Appendices

- Appendix 6: Environmental Action Plan

Investment decision papers

- Online document library for Investment decision papers

Supporting documents

Appendices

- Appendix 11: Stakeholder engagement and decision log
- Appendix 17: Workforce and supply chain resilience strategy

Shaping our plan – insight to ambition

The methane gas network will continue to be necessary for decades to come.

Despite the uncertainty that surrounds the future of the gas network and the UK's ultimate pathway to net zero, what is certain is that the gas network will continue to be the UK's primary source of heat in homes and power for businesses and industry for many years to come.

Our plan continues to place significant emphasis on driving sustainable environmental improvements, focussing on reducing greenhouse gas emissions and minimising our impact on the natural world. We have developed a highly ambitious Environmental Action Plan (Appendix 6), which we believe will continue to set the standard amongst gas distribution businesses.

We have focussed on reducing the largest contributor to our emissions, methane leakage, building on the actions taken in RIIO-2, such as our mains replacement programme, focus on theft of gas, industry leading pressure management levels and gas conditioning. We also started trialling innovative new leakage detection technology from around the world such as the Picarro vehicle mounted sensor system.

In RIIO-3 we want to go beyond the improvements enabled through the mains replacement programme. During the period we will implement a new Advanced Leakage Management Approach (ALMA), combining Advanced Leakage Detection (ALD) technology, a Digital Platform for Leakage Analytics (DPLA) and an Advanced Leakage Intervention Programme (ALIP) that targets interventions on our leakiest assets, including both traditional and innovative approaches such as robotic intervention.

We have seen the level of public scrutiny and dissatisfaction that has arisen recently from a lack of investment in the water industry, and we believe that our focus on investing to reduce methane leakage is critical in mitigating such issues arising in the gas network sector.

In our plan, we also focus on low-carbon alternatives to natural gas, including those available today (e.g. biomethane) and continuing our work to demonstrate the potential uses of hydrogen at scale. We recognise that an energy transition is only possible with high levels of collaboration between businesses, policy makers, government and other stakeholders, and as such, we are proposing to develop models and tools which will be able to be used by market participants and strategic planners to determine the impact of different pathways. We are also creating a specialist internal team to support our regional stakeholders in their planning for net zero.

Customers are clear on the outcomes they want, but feel powerless in achieving them

Unlike most of the topics we engage with customers and stakeholders on, where there is a often a clear consensus on needs and expectations, when seeking their views on environmental matters, the feedback is much more nuanced. Our targeted research found that only 50% of people are concerned about climate change impacts in their lifetime and many struggle to understand Cadent's role in it as we don't make or sell gas directly to customers. Over 75% of our customers state that they are concerned about climate change and more than 90% say that they understand 'net zero'.

However, when we ask customers their appetite for Cadent to invest further to reduce our impact on the environment, including reducing leakage (e.g. through our willingness to pay study), the consensus is less uniform.

The situation is complicated further by a very low level of customer understanding of their energy bills and increasingly low levels of engagement in thinking about energy. The result is that customers generally feel that they are doing all that they can reasonably afford to do in order to be environmentally conscious, and that there is an expectation that others, including big business and the Government, will 'do the big things' such as decarbonise the energy system.

With customer insight being so difficult to triangulate into a clear set of expectations, it reinforces the importance of our engagement with expert stakeholders in this space. We have consistently struggled to engage with organisations who specialise in environmental matters (e.g. Greenpeace, Green Alliance and WWF), with most having strict policies in place restricting their involvement with companies working with fossil fuels. Therefore, we have created a dedicated Sustainability Challenge Group (SCG), which sits alongside our Customer Challenge Group (undertaking the role of Ofgem's Independent Stakeholder Group), with expert panel members from academia, energy, engineering, sustainability and innovation.

The steer from this group and other expert stakeholders (detailed in our **Stakeholder engagement and decision log, Appendix 11, rows B1-B6),** is far more consistent; Cadent must demonstrate leadership and ambition in materially reducing its impact on the environment, with a clear focus on leakage reduction, whilst continuing to lead the way in demonstrating the future role of gas and hydrogen.

We have added a third lens by undertaking cost benefit analysis (CBA) for all of the actions that we have proposed within our Environmental Action Plan, such that we have considered a wider societal perspective in our decision-making process.

Our ambition is to manage the greenest, cleanest and most technologically advanced gas network in the UK.

Our RIIO-3 Environmental Action Plan (Appendix 6) is even more ambitious and impactful than our existing plan

The development of our EAP has been shaped by:

- An assessment of which initiatives will have the greatest environmental impact.
- Insights and views from customers and stakeholders.
- The research that we have commissioned on best practice and the future of the industry.
- The strategic direction received from policy makers.

Our EAP contains details of all of the actions, incentives and regulatory outputs that sit within the Infrastructure fit for a low carbon future outcome area. It includes the following 5 areas, that are each briefly summarised in this chapter:

B1 **Climate and carbon commitments**

B2 **Sustainable use of resources**

B3 **Biodiversity management and natural capital**

B4 **Reducing environmental impacts from operations**

B5 **Net zero transitions in the energy system**

Performance against these outcomes will be reported in our Annual Environment Report.

Annual Environmental Report

Key proposed plan commitments

B1 Climate and carbon commitments

Enhanced from RIIO-2

We will reduce shrinkage over RIIO-3 by **over 16%** through (i) continuing to deliver the IMRRP, (ii) our sector-leading pressure management optimisation (iii) gas conditioning application to joints of Monoethylene Glycol (MEG) (iv) continuing to tackle theft of gas and minimising own use gas.

We will also reduce our business carbon footprint (non-shrinkage) by a **further 13%** during the period, with continued focus on electrifying our vehicle fleet, upgrading our property portfolio, procuring renewable energy for our sites and proactively engaging across our supply chain to accurately measure and record Scope 3 emissions, driving annual reductions.

New for RIIO-3

We are proud of the emission reductions that we have achieved to date through more traditional approaches (described above), but given that methane emissions, predominantly through network leakage, is by far the most significant environmental impact we are directly accountable for, we are keen to go further. As such, during RIIO-2 we have utilised innovation funding and trialled a range of technologies to help us to more accurately identify leakages and use this data to inform how we can optimise our workload profiling to reduce leaks in the most effective way.

In RIIO-3 we are proposing the implementation of our Advanced Leakage Management Approach (ALMA), which builds on the lessons learned from these trials, and directly responds to feedback from our stakeholders, including our Sustainability Challenge Group to go further than we do currently in tackling methane leakage levels. During RIIO-3 the ALMA will reduce methane leakage by a further 10%.

The ALMA is made up of three parts, which are each described in more detail in the case study on the next page:

Advanced Leakage Detection (ALD) – providing condition monitoring of our network and an actual measure of the leakage rate for our asset base, moving away from static assumptions.

Digital Platform for Leakage Analytics (DPLA) – creating a dynamic leakage model that will provide asset specific leakage measures, allowing interventions to be both targeted and measured.

Advanced Leakage Intervention Programme (ALIP) – targeting interventions on our leakiest assets, including both traditional and innovative approaches such as robotic intervention.

Figure 18: We have optimised pressure management to deliver better leakage performance in RIIO-1 and RIIO-2

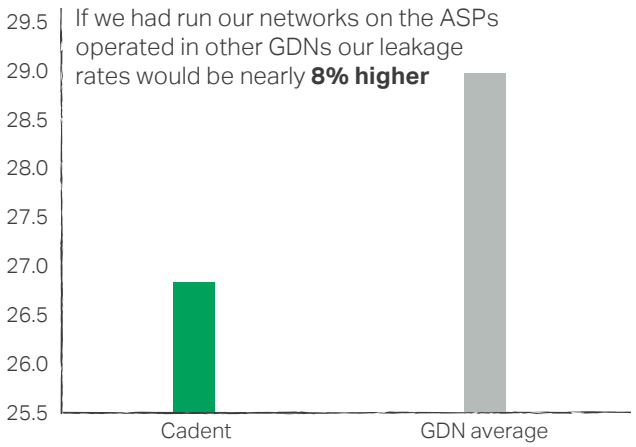
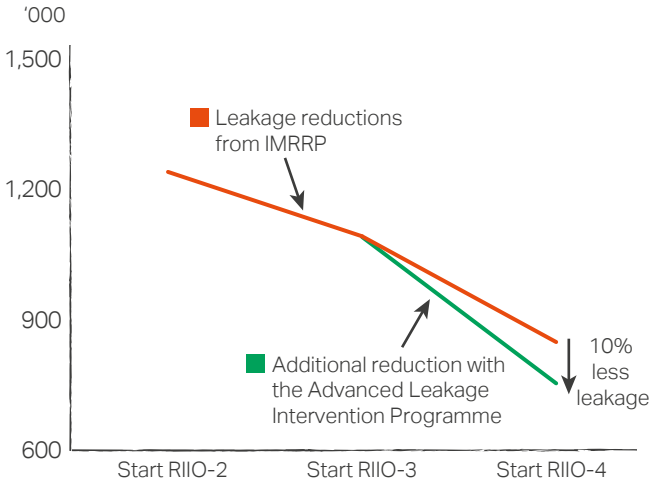


Figure 19: We will deliver a step change in leakage reduction from advanced leakage management



Case study 4: Advanced leakage management approach

Advanced Leakage Detection (ALD)

During RIIO-2 we have trialled the use of Picarro's Advanced Leakage Detection technology in several of our networks, starting with North London.

We have engaged externally with the Italian gas network, Italgas, who have successfully deployed the technology across their network, enabling a significant reduction in leakage emissions.

Our trials have demonstrated that roughly 50% of the emissions from our networks originate from c.5% of our pipeline. We have used the outputs of the trials to inform the cost-benefit repex work in RIIO-2, supporting outperformance against leakage targets set at the start of the period. The trials have also been used to inform the Advanced Leakage Intervention Programme for RIIO-3.

Digital Platform for Leakage Analytics (DPLA)

The DPLA works alongside the ALD project delivering real-time, granular insights into leakage across our entire asset base by leveraging the data from sensors such as Picarro.

It overlays sophisticated machine learning and hydraulic modelling techniques, allowing us to strategically repair leaks and conduct priority mains replacement programmes, expediting emissions reductions and improving network safety.

During RIIO-2 we embarked on a pioneering Strategic Innovation Fund (SIF) project in collaboration with Guidehouse Europe, other GDNs and National Gas. Our proposals will see the DPLA be fully operational by 2027, and working alongside the ALD will allow us to replace the Shrinkage Leakage Model (SLM), moving from modelled to measured leakage interventions against all asset classes.

In delivering the optimal roll-out of technologies we have considered the relative cost benefits of investing in a broader application of ALD technology versus a more sophisticated machine learning and AI built on the DPLA.

Advanced Leakage Intervention Programme

The ALD and DPLA ultimately feed ever more accurate and impactful leakage intervention, which in turn will feed the outcomes back to drive learning and impact into future planning through the DPLA.

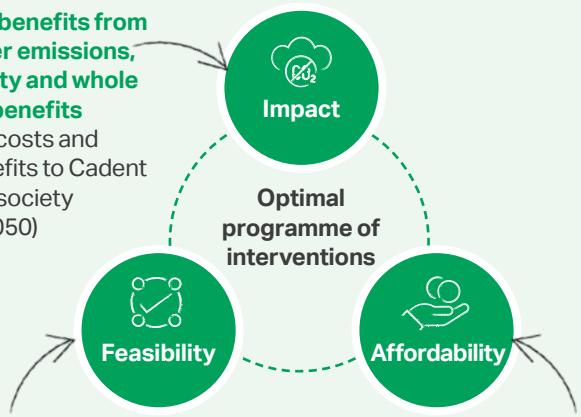
Using the outputs of the ALD and DPLA trials to date, we have worked with Boston Consulting Group and Partners to design an Advanced Leakage Intervention Programme to use in addition to our IMRRP in RIIO-3. Having analysed the range of options, we have proposed the delivery of 750km of cost benefit mains replacement, predominately Tier 1 steel, which equates to c.10% of our overall mains replacement. Utilising traditional and innovative techniques to reduce emissions, we will reduce leakage by a further 10% with a full pay back within 16 years.

Case study 5: Our proposed Advanced Leakage Intervention Programme (ALIP)

To design the optimal ALIP, we considered a range of options based on impact, affordability and deliverability. We have overlaid the outputs from the Advanced Leakage Detection trials (that we have run in several of our networks) into the Shrinkage and Leakage Model to compare options.

We considered programme options ranging from 300km to 2,250km of additional asset replacement during RIIO-3, and assessed these against extreme options of doing no additional work (beyond the IMRRP) to running at a linear level that would replace all pipe (with polyethylene) by 2050. A full breakdown of the options considered is included within our Environmental Action Plan (Appendix 6, page 15), and summarised in the figure here:

We have designed a programme that balances these factors and is beneficial for our customers, communities and the environment. During RIIO-3, through our ALIP, we will replace 53km per year of iron and steel mains in our Eastern network, 30km per annum in North London, 35km per year in the North West and 32km per year in the West Midlands. This is a total of **750km for the RIIO-3 period** and work is phased over the five years, gradually increasing over the period.



Impact

Over **100ktCO$_2$e** carbon reduction – **10%** against our 2025/26 baseline emission levels.

The programmes broader benefits deliver to society an estimated £428m in whole life net benefit.

Affordability

The additional repex of **£374m** corresponds to a net cost of abatement per tonne of CO$_2$e abated of **£162.**

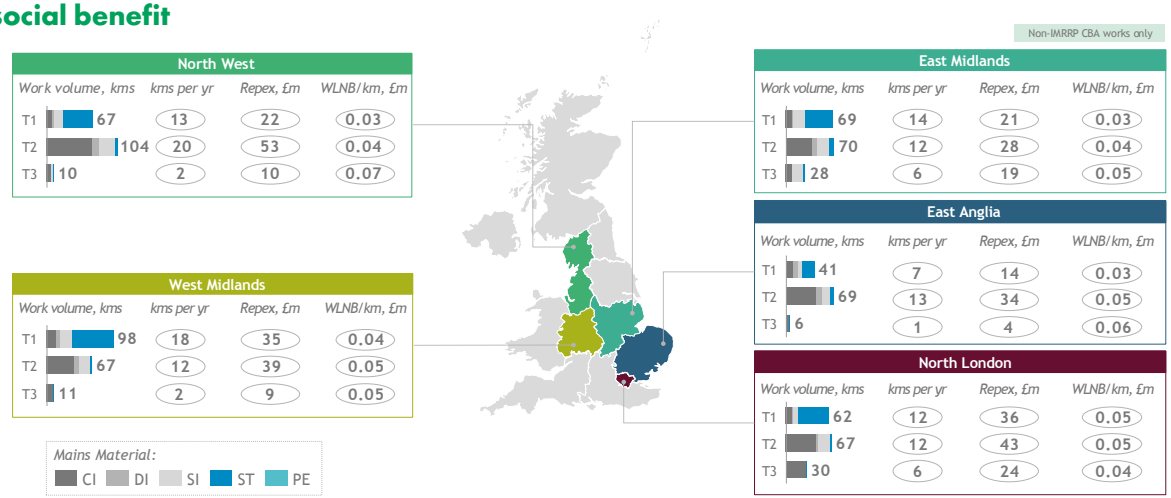
By comparison decarbonising heating in existing homes, primarily via heat pumps has a marginal cost of **£223 per tonne of CO$_2$e** abated.

Feasibility

The selected programme has been assessed by our own **energy experts** and our supply chain partners.

It considers the work types, and workforce requirements accounted for in **Workforce and Supply Chain Resilience Strategy.**

The ALIP across our networks with km of pipes targeted, projected spend and contribution to social benefit



B2 Sustainable use of resources

This part of our EAP considers the impact of our business operations on our physical environment and considers the use of materials and environmental impacts associated with their use. We also focus on spoil and other waste associated with excavations and direct waste generated through our operations.

Enhanced from RIIO-2

We will continue to work internally and across our supply chain to reduce waste through reduction, recycling and reuse initiatives which will deliver an incremental 2% reduction in spoil to landfill year on year and ensure that first use aggregate is less than 7% for all of our reinstatement works. We will place additional focus on two key areas noted by our customers and colleagues; reducing the level of PE pipe waste by over 1,000km (50%) and eliminating single use plastic waste by the end of the period, improving from a baseline of 90% eliminated today.

We will also develop a plan to improve on-site waste efficiency, and drive down consumption through behaviour change across our own colleagues and those within our supply chain.

B3 Biodiversity management and natural capital

Cadent's land ownership supports the range of network and operational needs required to distribute gas to where it's needed.

Enhanced from RIIO-2

It consists of office and depot buildings, operational assets, car parks, and often other built-over, hard-standing surfaces on our Pressure Reduction Stations. As well as our office and operational land footprint, we also impact on land and biodiversity through the installation of new pipelines, pipeline diversions or other new projects.

Each location will host a wide variety of biodiversity opportunities, whether small and local at a depot to large scale, and offers net-gain opportunities on new pipeline projects. We can positively impact the biodiversity and habitat value in our local communities, supporting local ecosystems and services.

We will complete the process (started in RIIO-2) of surveying all of our key 78 sites to establish biodiversity benchmarks and site-specific improvement plans. Using the results of the biodiversity surveys, we will deliver a biodiversity net gain of at least 30% across the sites.

We are proposing an additional focus on community nature improvement projects. During our planned works, we will work with local communities to support targeted nature-based solutions as land has been repurposed following our mains replacement activities. Additionally, we will offset a minimum of 20,000 tCO_2e, by partnering with land-owners within our network (e.g. The Woodland Trust) to design nature based improvement projects that will deliver long-term carbon removal, significant social benefits and an expansion of urban green space.

Re-wilding at our Craven Arms site

B4 Reducing environmental impacts from operations and projects

Enhanced from RIIO-2

We have made significant improvements in environmental awareness and reporting in our supply chain. At the start of RIIO-2, we became a member of the Supply Chain Sustainability School to further embed sustainability into our business and across our supply chain. With the School's help and the platform provided, we have built on our knowledge to meet our sustainability goals and continue our journey to net zero emissions.

Through the use of their reporting tool, our delivery partners and suppliers can report on the carbon associated with activities undertaken. This supports us in reporting our Scope 3 emissions, but also in understanding the embodied carbon of goods and services.

We will embed 'circular economy' principles, working with our current and future supply chain to shift to more reliable materials and services that can be reused, upgraded and repaired. Building from this, we will complete our first life cycle assessment of a street works mains replacement project and take the outputs from the assessment to analyse the environmental impacts from materials and services. This will allow us to develop a baseline and action plan of how we can reduce the overall environmental impact from construction works, building our learnings into our plans for RIIO-4.

Biomethane plant

B5 Net zero emissions in the energy system

Enhanced from RIIO-2

We are proud of the thought leadership work we have done through RIIO-2. This helps to illustrate and support policy makers on how the gas network could be decarbonised and play a critical role in the transition to net zero.

We will continue to support the transition to an environmentally friendly, and flexible, low carbon and low emissions energy system.

This section of our EAP includes our continued commitment to facilitating the connection of low carbon and green resources with key focus on two additional priorities.

- Supporting national and regional whole system planning.
- Setting out our plans to create a transformation in the scale of biomethane production that can be connected to transport up to the 15TWh (across our networks) that the Renewable Energy Association has estimated will be available by 2032. The highlights can be seen in Case study 6 on page 49.

RIIO-3 sees a requirement for extensive collaboration with key external stakeholders such as Regional Energy Strategic Planners (RESPs), Electricity Distribution Network Operators (DNOs) and the National Energy System Operator (NESO). Given our scale and commitment to protecting the planet, we have assessed how we can be best provide the necessary data, insight and expertise to support effective whole system planning across the multiple potential futures including green gas connection such as biomethane, repurposing for hydrogen and substitution/disconnection for electrified heat solutions. We have modelled our proposed requirements in this area on the approach adopted by UKPN that was supported by Ofgem in RIIO-ED2 and as they are the closest proxy to the scale of our organisation and interfaces. In addition, our Digitalisation action plan (Appendix 15, page 14) is a key enabler for this through our Future Energy Explorer (Case study 7 on page 49).

Case study 6: Unlocking the potential of biomethane

In developing a 'field to meter' approach we are setting ourselves bold ambitions to grow the amount of biomethane on our network

Biomethane can play an important role in decarbonising the gas network. We have 45 biomethane sites connected to our network today providing over 3TWh of low carbon gas, enough to heat 300,000 homes.

We are working to ensure that the total UK potential for biomethane is realised which the Renewable Energy Association set at around 30TWh (across the UK) by 2032. We are taking a number of steps in RIIO-3:

1. Transforming our connections process that can support a step change in biomethane connections.
2. Implementing charging changes to socialise the cost of installing and operating entry reinforcements.
3. Identifying, testing and implementing new innovative approaches to providing efficient new entry capacity.
4. Working with trusted third parties to innovate and minimise costs, learning from our innovation partners and internal experience. Maximising third party roles to innovate and minimise costs.

Case study 7: Future Energy Explorer

As a responsible energy provider, we are committed to supporting the UK's net zero goals. This requires a deep understanding of future energy requirements of the UK and the ability to adapt our infrastructure to meet evolving customer needs.

However, traditional energy modelling often relies on generalised assumptions and lacks the granularity to assess the viability of different pathways at a local level.

To address this challenge, we developed the Future Energy Explorer (FEE), a powerful, consumer-focused forecasting model. FEE utilises granular data, including property types, energy efficiency ratings, consumer affluence, and local infrastructure, to create detailed, localised scenarios for every consumer within our network.

Unlike previous models that focused on broad regional trends, FEE analyses viability at the individual property level, considering the unique characteristics of each household and its surrounding environment. This allows for a more nuanced understanding of the costs and benefits of transitioning to different fuel types, such as hydrogen or electricity.

By integrating data from various sources, including Google Cloud and Looker, FEE harnesses the power of big data to generate credible and unbiased outputs. This enables us to build compelling, consumer-centric narratives around net zero transitions.

FEE represents a significant advancement in energy scenario modelling and we will use this to provide data to RESPs to support their regional planning and the NESO to inform national holistic transition plans.

Summary of commitments

Table 6: Our output commitments for infrastructure fit for a low-cost transition to net zero

◆ Incremental cost/revenue with this output

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
B1 Environmental Action Plan (EAP)											
B1.1	**Environmental Action Plan (EAP) & Annual Environmental Report (AER)**	Common	LO and ODI-R	Period and Annual	Annual reporting of progress	✓	✓	✓	✓	✓	Structure refreshed for RIIO-3, with new actions
B2 Climate and carbon commitment											
B2.1	**Shrinkage (SLM) reduction – energy**	Common	EAP Action	Period	GWh	64.9	24.9	41.1	32.9	**163.8**	154.5
	Shrinkage (SLM) reduction – carbon	Common	EAP Action	Period	tCO_2e	81,169	30,639	50,478	40,992	**203,277**	189,912
B2.2	**Leakage (SLM) reduction – energy**	Common	EAP Action	Period	GWh	66.4	25.0	41.2	33.5	**166.1**	154.9
	Leakage (SLM) reduction – carbon	Common	EAP Action	Period	tCO_2e	81,442	30,654	50,490	41,107	**203,693**	189,991
	Leakage – Average System Pressure	Common	EAP Action	Period	mbar	29.1	27.1	27.6	27.1	**27.9**	28.5
	Leakage – Gas Conditioning	Common	EAP Action	Period	Saturation %	32.4	38.9	37.9	29.6	**34.7**	35.1
B2.3	**Advanced Leakage Intervention Programme – emissions reduction (Hybrid-SLM) ◆**	Bespoke	EAP Action	Period	tCO_2e	36,679	17,394	22,461	27,837	**104,371**	New for RIIO-3
B2.4	**Plans to rollout leak detection technology ◆**	Common	EAP Action	Period	Rollout completion date	2028	2028	2028	2028	**2028**	New for RIIO-3, building on RIIO-2 pilot
B2.5	**Plans to roll out DPLA and observed leakage data ◆**	Common	EAP Action	Period	Rollout completion date	2026	2026	2027	2027	**2027**	New for RIIO-3, implementing RIIO-2 SIF project
B2.6	**Purging and venting operational advancements**	Bespoke	EAP Action	Period	$ktCO_2e$ reduction	✓	✓	✓	✓	**>5**	New for RIIO-3, building on RIIO-2 trials
B2.7	**NZARD – Shrinkage ◆**	Common	UIOLI	Period	Plan to use	✓	✓	✓	✓	✓	New for RIIO-3
B2.8	**Non-Shrinkage BCF (scope 1 & 2) reduction**	Common	EAP Action	Period	tCO_2e reduction	635	573	556	495	**2,260**	4,721
B2.9	**Measurement of scope 3 emissions – % of supply chain**	Common	EAP Action	Period	% of supply chain measured	✓	✓	✓	✓	**80%**	New for RIIO-3
B2.10	**In-home energy efficiency assessments – no. undertaken**	Bespoke	EAP Action	Period	no.	✓	✓	✓	✓	**>200,000**	New for RIIO-3

Summary of commitments

Table 6: Our output commitments for infrastructure fit for a low-cost transition to net zero

◆ Incremental cost/revenue with this output

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
B3 Sustainable use of resources											
B3.1	**Waste to landfill**	Bespoke	EAP Action	Period	% of waste to landfill	0.00%	0.00%	0.00%	0.00%	**0.00%**	<3% of all waste sent to landfill
B3.2	**Resource reduction (First use aggregate)**	Bespoke	EAP Action	Period	Tonne reduction	23,150	23,150	23,150	23,150	**92,600**	New for RIIO-3
B3.3	**PE pipe waste**	Bespoke	EAP Action	Period	km waste reduction	250	250	250	250	**1,000**	New for RIIO-3
B3.4	**Eliminating single use plastics**	Bespoke	EAP Action	Period	Tonne reduction	4.06	4.06	4.06	4.06	**16.25**	New for RIIO-3
B3.5	**Water management**	Bespoke	EAP Action	Annual	AER reporting	✓	✓	✓	✓	✓	New for RIIO-3
B4 Biodiversity management and natural capital											
B4.1	**Biodiversity Surveying ◆**	Bespoke	EAP Action	Period	Sites resurveyed	18	8	11	13	**50**	84 sites surveyed. From this we will implement action plans with a re-survey on ≈70% of sites.
B4.2	**Biodiversity Benchmarking**	Bespoke	EAP Action	Period	% improvement in DEFRA Biodiversity Metric Score	30%	30%	30%	30%	**30%**	New for RIIO-3
B4.3	**Nature based improvements in local communities**	Bespoke	EAP Action	Period	No. of schemes	≥1	≥1	≥1	≥1	**≥4**	Small number of sites identified for targeted nature-based solutions when land has been repurposed following mains replacement activities
B4.4	**Nature based solutions and partnerships ◆**	Bespoke	EAP Action	Period	tCO_2e removed (offset)	✓				**20,000**	New for RIIO-3
B5 Reducing our environmental impact from operations											
B5.1	**Embed circular economy principles**	Bespoke	EAP Action	Annual	AER progress reporting	✓	✓	✓	✓	✓	New for RIIO-3
B5.2	**A lifecycle assessment of streetworks**	Bespoke	EAP Action	Period	n/a	Life cycle assessment and action plan for RIIO-4					New for RIIO-3
B5.3	**ISO20400**	Bespoke	EAP Action	Period	Standard achievement	✓	✓	✓	✓	✓	New for RIIO-3
B5.4	**Mapping of emissions within our supply chain**	Bespoke	EAP Action	Annual	AER progress reporting	✓	✓	✓	✓	✓	New for RIIO-3
B6 Net zero transitions in the energy system											
B6.1	**Connecting low carbon and green resources**	Common	EAP Action	Annual	AER progress reporting	✓	✓	✓	✓	✓	New for RIIO-3
B6.2	**Supporting national and regional whole system planning ◆**	Bespoke	EAP Action	Period and Annual	AER progress reporting	✓	✓	✓	✓	✓	New for RIIO-3

Managing uncertainty and protecting against non-delivery

Uncertainty Mechanisms proposed

There are five common uncertainty mechanisms (specified in the Sector Specific Methodology Decision (SSMD)) that are relevant to this outcome area. We are proposing a revised scope for one of these to include property costs within the scope of the Heat Policy reopener to reflect the uncertainty over needs under different policy pathways.

In addition, we have specified one bespoke uncertainty mechanism to deal with uncertainty over the volume and costs associated with actions to facilitate the connection of biomethane resources. This mechanism is currently under discussion with Ofgem through our Heat Policy reopener submission in RIIO-2 and it is anticipated that any mechanism defined as part of that process could be rolled forward into the RIIO-3 framework.

Table 7: Summary of uncertainty mechanisms proposed for Infrastructure fit for a low-cost transition to net zero

Ref.	Area of uncertainty	Proposed mechanism for RIIO-3	Common/Bespoke	Where discussed in our plan
UM.B.1	Net zero	Re-opener	Common	N/A (We agree with SSMD scope)
UM.B.2	Net zero pre-construction works and small net zero projects	Re-opener	Common	N/A (We agree with SSMD scope)
UM.B.3	Coordinated Adjustment Mechanism	Re-opener	Common	N/A (We agree with SSMD scope)
UM.B.4	Heat policy	Re-opener	Revised Common	BPDT M8.14 Commentary section 2.3.3
UM.B.5	Shrinkage	Pass-through	Common	N/A (We agree with SSMD scope)
UM.B.6	Connecting entry gas	Pass-through*	New Bespoke	BPDT M8.14 Commentary section 2.4.1

*Note: as this is a new area we propose a pass-through, or actual cost recovery, mechanism with an ex-post review of efficient costs.

Ensuring our plan is deliverable

We have tested the deliverability of our commitments in this area with a predominant focus on:

1. Skilled resource availability.
2. Sufficient access to the network to complete works in the defined timescales.
3. The practical achievability of our output commitments.
4. The availability of zero emissions vehicles and infrastructure.
5. Mitigating the risk of cost inefficiency to ensure affordability.

Our Workforce and supply chain resilience strategy **(Appendix 17, page 22)** gives further detail on how we are mitigating the largest challenges in these outcome areas:

- The deliverability and cost efficiency of the advanced leakage intervention programme through ensuring a robust supply chain for greater volumes of larger diameter replacement work.
- The capability to scale up the biomethane connection process as part of an industry wide supply chain.

We have used our experience in RIIO-2 around the practicalities and how best to develop the rollout of zero-emissions vehicles and charging infrastructure to build our plans for RIIO-3.

High quality service

We will maintain the excellent levels of customer satisfaction we have achieved over RIIO-2, and evolve this for future customer requirements relating to our disconnections service.

In addition, we will extend our sector leadership in supporting customers in vulnerable situations, and how we create the most value from our investments in this area. We also describe our plans to roll out the benefits of the streetworks collaboration incentive in North London to all of our networks.

In this section

Primary references to other parts of the plan

Appendices

- Appendix 5: Joint GDN vulnerability strategy
- Appendix 16: Vulnerability strategy

Supporting documents

Appendices

- Appendix 6: Environmental Action Plan
- Appendix 11: Stakeholder engagement and decision log
- Appendix 17: Workforce and supply chain resilience strategy

Shaping our plan – insight to ambition

At our heart, we are a public service business providing a vital service to millions of gas users (our customers) across the UK.

We are responsible for transporting gas to around 11 million domestic and business customers. Without this service, individuals would not be able to heat their homes and businesses and industry would not be able to manufacture their goods or power their premises. We will provide these critical services in a customer centric manner, focussing in on delivering outstanding customer service levels, in the areas that matter the most to them.

We have robustly tested what delivering a high-quality service means to our customers. Whilst the war in Ukraine and cost of living crisis have heightened their focus on energy security and how we support customers who are financially vulnerable, their priorities have remained largely unchanged over the RIIO-2 period.

Minimising disruption remains a key factor for customers and we've seen this increase in areas where other construction work is prominent (e.g. areas impacted by HS2). When customers talk about disruption, they are mainly referencing streetworks, which impacts not only local residents, but also other customers passing by.

During RIIO-2, the collaborative streetworks incentive has been successfully deployed within the Greater London Authority (GLA) areas.

When surveyed, over 75% of our customers across our networks support the efforts we make to coordinate streetworks activities across utility companies, Local Authorities and town planners. We have engaged with Local Authorities across our networks and there is a clear desire from them for us to replicate this model in their cities, especially where they are seeing increased disruption from water, electricity and telecoms utilities as they ramp up their workloads.
Case study 11 on page 63.

When it comes to reliability, customers understand and typically accept that their gas supply may be interrupted from time to time, and believe that current interruption timescale targets do not need changing. Indeed, this was the only attribute of our service tested through our 'willingness to pay' research programme where more customers would rather pay less for a reduced service (i.e. longer interruptions) than see improvements[6]. Customers place a much greater emphasis on high quality, timely communications and place a high degree of importance on the provision of personalised welfare products such as takeaway food vouchers and alternative heating and cooking appliances.

Supporting customers in vulnerable situations remains a high priority for our customers. Over 80% of our customers are willing to pay more through their gas bill for supporting customers in vulnerable situations. This is an area where we engage extensively with expert stakeholders, including Citizens Advice (central and local), National Energy Action, charities specialising in support of specific vulnerabilities (e.g. Age UK, Scope, RNIB) and organisations that deliver services alongside us (e.g. NHS Trusts, Fire and Rescue Services and Groundworks UK). In total we partner with over 80 organisations to define, refine and deliver our customer vulnerability strategy, including prioritising how funding is allocated across the various categories of customer needs.

We've used insight from customers and expert stakeholders not only to help us define regulatory output measures but also to assess the core business processes that we operate. For example, we've tested ways in which customers prefer to contact us, with low acceptance of replacing human interaction with lower cost artificial intelligence, or similar. Over two-thirds of our customers say that they would be happy for us to have access to their personal details (through their gas supplier) to enable 'live' and more frequent updates to be issued to them relating to any work being undertaken by Cadent that may impact them (e.g. a planned supply interruption).

Providing the best quality of service to our customers

This can be measured in many ways, but through our extensive enhanced engagement programme, in particular with expert stakeholders, we believe that the key measures are value for money, customer satisfaction levels and the reach, impact and social value delivered through our customer vulnerability strategy. Therefore, our plan includes outputs, targets and commitments to report against each of these areas, which can be easily benchmarked against our industry.

6. 26% opted for a reduced service at a lower cost vs. 21% who opted for an improved service and associated cost increase.

Key proposed plan commitments

C1 Maintaining the excellent standards of customer satisfaction

Customer satisfaction targets to be consulted on for emergency and repair, planned work and connections services in Ofgem's Draft Determination (expected June 2025)

Continuation for RIIO-3

Since their introduction at the start of RIIO-1, the customer satisfaction incentives have helped to drive a huge step change in customer performance levels across all of the GDNs. The incentives have undoubtedly been a huge success, so much so that all GDNs are now delivering service consistently rated greater than 9 out of 10 across the measured services, which compares positively against other industries and sectors.

Since Cadent was formed in 2017, customer satisfaction levels have improved across all of our networks in each of the three customer journeys (emergency and repair, customer connections and planned work) on an annual basis.

We have considered the specific targets for each customer service line based on current performance levels and expected workload volumes in RIIO-3.

Emergency & Repair service – all GDNs have largely clustered around excellent customer service scores of 9.3/10. We will ensure that we maintain these scores over the RIIO-3 period.

Connections – the proposed removal of the Domestic Load Connection Allowance will mean that customers have to pay considerably more for a new connection, hence we are likely to see an impact on volumes and satisfaction levels compared to the baseline in RIIO-2. We are undertaking a joint research project with the other GDNs to explore the potential impact of this and will provide this to Ofgem to inform the target setting.

Planned work – this will continue to be a high-volume activity in RIIO-3 with the ongoing Iron Mains Risk Reduction Programme. The sector has again delivered very strong scores in RIIO-2 and a key focus for the next period will be on driving our North London network scores to the same level as our other networks, noting the unique challenges related to multi-occupancy buildings, high levels of urbanisation and the complexity of planning such works.

New for RIIO-3

Disconnections – We will lead work with the other GDNs to establish a survey to measure the service levels for gas customers requesting disconnections from the network. See case study 8 below.

Case study 8: Preparing for the energy transition

Creating a new customer satisfaction survey for our disconnection process and working with the HSE and Ofgem to determine the policy framework and a low cost, safe and effective means to disconnect services.

We currently complete c.15,000 disconnections per year, of which 85% are supplier requested and 15% customer requested.

We will help our regulators answer key policy questions such as:

a) What work is required to disconnect a service safely and efficiently, if there is no prospect of it being used again?

b) Who might be able to carry out that work (including potential roles for third parties)?

c) Who should request and pay for the costs of disconnection (considering how the current supplier-led and customer-led processes should evolve)?

d) Should customers leaving the network pay for any stranded costs to remaining customers?

Delivering further improvement by focussing on our worst-served customers

To fulfil our ambition of delivering the best service to customers, we are looking at how we can build on the strong progress made to date.

Whilst the average customer satisfaction levels are clearly a very positive story, the reality is that there are still aspects of each customer journey where improvement is needed (e.g. customer communications and private ground reinstatements). However, because the overarching customer experience is so good, these opportunities for improvement can easily go unnoticed. We are actively focusing on a number of initiatives to improve these areas and believe that the existing customer satisfaction measures can be evolved to place greater emphasis on aspects of the customer journey that receive the lowest satisfaction levels, setting new baseline performance standards.

We are a founding member of the Fellowship for Responsible Business (FRB). This is a membership of a wide range of organisations from across multiple sectors who work collaboratively to explore a range of topics, designed to share best practice from a hugely diverse spectrum of experience. In February 2024 we led several workshops involving such brands as Sainsbury's, First Direct, Vodafone, Overbury and Atom. We explored the topic of how to use enhanced performance measurements to move customer performance from 'good to great'.

We discussed topics such as 'worst served customers' and considered how incentives could and should be calculated to ensure that the voices of different types of customers are heard.

We identified a number of options for how the existing customer satisfaction levels could be enhanced (e.g. increasing the weighting to the questions that customers typically apply the lowest scores to). We will trial a series of them in RIIO-3, sharing the results with Ofgem and the other GDNs with a view of recommending how this enhancement could be applied, to the benefit of all customers in RIIO-4.

C2 Complaints handling

Complaints handling targets to be confirmed in Ofgem's Draft Determination (expected June 2025)

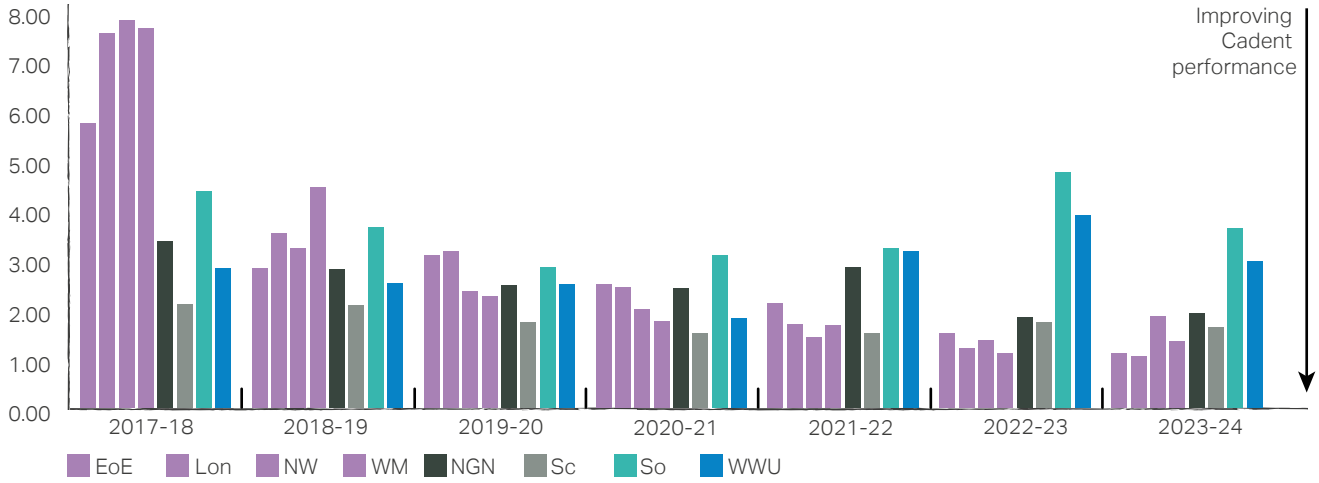
Continuation for RIIO-3

We have delivered sector leading performance on complaints handling during RIIO-2 and plan to maintain the standard we have set.

We considered a range of options for how we might improve the existing complaints management performance measure, including placing more emphasis on the number of complaints as opposed to the efficiency and effectiveness of resolving them (as is the focus of the existing measure).

Following extensive engagements with other GDNs, together with input from our Customer Challenge Group and an assessment of measures applied across other industries, we believe that maintaining the existing measure is in the best interest of customers and allows us and Ofgem to continue to seek year-on-year improvements. Figure 20 below shows how we have set the standard in complaints management since 2019 and continue to do so today.

Figure 20: We now lead the sector on complaint handling performance
(a lower complaints handling score denotes better performance)



C3 Guaranteed Standards of Performance (GSoP)

We will deliver beyond the Guaranteed Standards of Performance.

Continuation for RIIO-3

We set targets that far exceed those described within the GSoPs and will continue to deliver customer service standards that go beyond them. We will gather customer insight to inform a review of Guaranteed Standards for RIIO-4.

New for RIIO-3

When we engage with our customers, and key stakeholders, the principle of promising to deliver minimum standards of performance, with consequences if they are not achieved, is very well supported. When we discuss the specific minimum standards (GSoPs) that are currently in place, however, most are seen as difficult to understand, many outdated, and the balance is significantly skewed towards a single customer journey (connections).

When overlaying changes in technology (in particular that relate to how customers expect businesses to engage with them) and in thinking about the changes that will take effect as we begin to transition to low carbon energy for heating, we believe that there is a very compelling case for updating the GSoPs.

However, given the high levels of uncertainty around the timing and shape of the UK's energy transition plan, rather than create additional uncertainty or confusion for customers by making changes to them now, we propose that GDNs work collaboratively with Ofgem, and key customer experts (e.g. Citizens Advice) during the RIIO-3 period to design and agree a new set of GSoP measures that will come into effect at the start of RIIO-4. We will take the lead on this, considering any legislative, process and operational changes that might need to be made.

C4 Making the maximum positive impact in supporting customers in vulnerable situations

We propose a use it or lose it Vulnerability and Carbon Monoxide Allowance of £84.4m for Cadent for RIIO-3 with an incremental baseline allowance of £23.5m to embed RIIO-2 initiatives as business as usual (following consistent assumptions agreed with the other GDNs).

Enhanced outcome ambitions for RIIO-3

We are proposing a series of commitments around the impact we are aspiring to deliver to customers in vulnerable situations from the funding, enhancing commitments and targets that measure the true impact of our initiatives.

We will continue to focus on four key customer vulnerability outcome areas to help all of our customers to have access to safe, reliable and affordable heat.

Our aim is to keep all of our customers safe, warm and independent in their homes, no matter what their circumstances. Largely, this means ensuring that our customers have access to safe, reliable and affordable heat when they need it, because without it, many will become vulnerable relatively quickly.

We focus on ensuring that we can identify customers in vulnerable situations and these customers can engage with us, receiving the specialist services they need. We also focus on mitigating the potential safety and health issues related to carbon monoxide so that all customers can enjoy the benefits of their gas systems without any safety concerns. Our plan contains a range of initiatives designed to ensure that our customers can afford to use their heating systems, with a real emphasis on permanent solutions that take households out of fuel poverty for good (e.g. income maximisation and energy efficiency improvements in homes). And finally, we recognise that anyone can become vulnerable if they are left without gas, with our innovative approach to offering in home services that expand beyond the traditional boundary of the gas distribution network.

We are leading the industry in supporting customers in vulnerable situations and our RIIO-3 plan will extend this position even further

Gas distribution businesses are uniquely positioned to play a significant role in supporting customers in vulnerable situations. We (along with other GDNs) are in a privileged position; we enter thousands of homes every single day, speak with tens of thousands more through our customer centre and engage with many more through our mains replacement programmes.

This direct customer interaction, coupled with an inherent level of trust (as we do not sell anything directly to customers) and the fact that we train all of our front-line employees annually to identify and support customers in vulnerable situations, allows us to play a critical role in the communities we operate within.

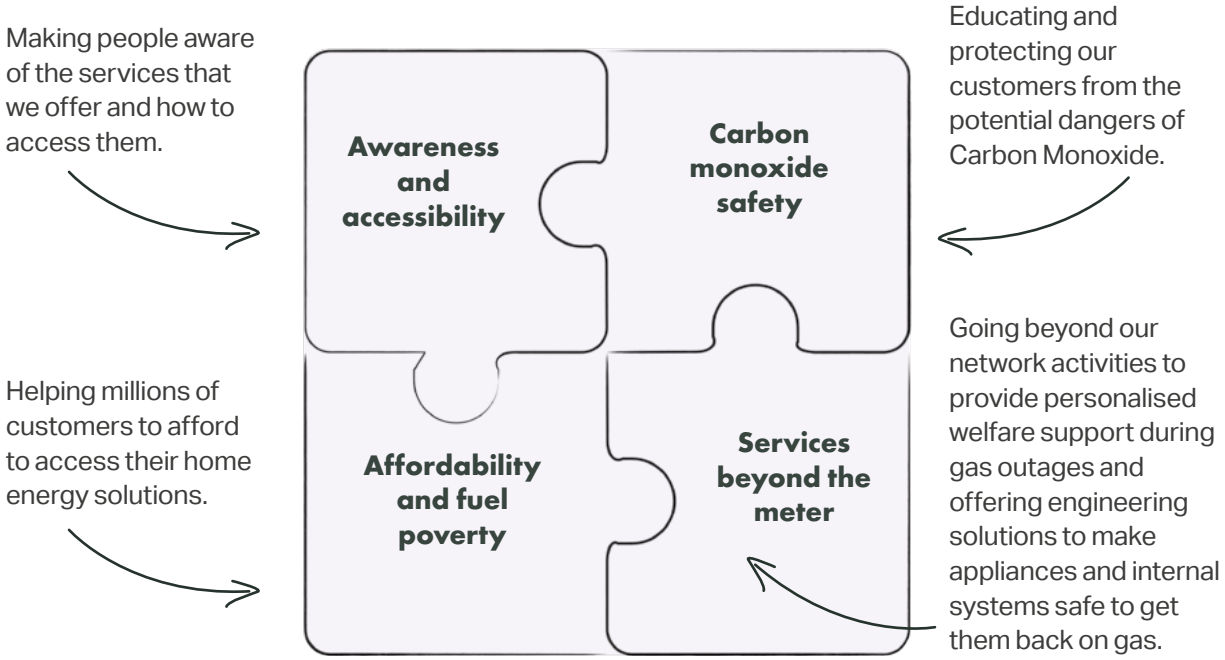
Our customer vulnerability strategy ensures that we maximise the privileged position that GDNs have with enhanced data, strategic delivery partnerships, additional shareholder investment and an expert in-house delivery capability.

During RIIO-2 we will reach over five million customers in delivering over 200 separate projects (resulting from our customer vulnerability strategy), **saving customers living in fuel poverty over half a billion pounds** (money back in their pockets through money management, debt consolidation and income maximisation) and establishing a legacy in over 350 local communities with Centres for Warmth that welcome over 50,000 customers every single week. We have progressively increased the number of Centres for Warmth over RIIO-2 and propose to open more in RIIO-3. Our projects have been designed to support the diverse needs of our customers, whether they be physical, health, language, financial or geographically related.

We remain committed to designing and implementing new ways of working, such that we meet the needs of those who often get missed by more generic and widespread measures.

This is why investing in our people, to create an in-house delivery team with over 200 years of collective experience in the charity sector, is so critical to our success. We ensure that the VCMA (and other funding) is not simply handed out to good causes, but we co-create direct solutions to problems that exist, filling gaps that exist across the UK.

Figure 21: The key outcome areas of our customer vulnerability strategy



Our Centres for Warmth, Direct Access to Wellbeing Services (DAWS) **(Case studies on page 60)** and range of services offered beyond the meter are truly pioneering approaches to tacking some of the most challenging situations that customers in vulnerable situations find themselves in.

These projects and others are described in more detail in our Customer Vulnerability Strategy **(Appendix 16, page 11)**.

We will deliver even greater levels of customer impact in RIIO-3, with a smaller impact on customers' bills

Our RIIO-3 Customer Vulnerability Strategy will support even more customers in RIIO-3 (than in RIIO-2) with total regulatory funding requirements reducing from £120m to £108m (in 2023/24 prices). This has been made possible because of the firm foundations established in RIIO-2, including investing in sunk costs (e.g. establishment of the Services Beyond the Meter training centre and capital investment such as that for our Mobile Advice Centres), and through learning lessons from each project we invest in, forming a growing understanding of where we, as a GDN, are able to make the most impactful contribution to the challenges that customers across our networks are facing.

We believe it is essential that regulatory funding must not be reduced any further than that enabled by the efficiencies we have realised during RIIO-2. If it were, we would have to roll back on the number of initiatives we support today and ultimately be able to support fewer customers, reducing the positive impact we are having.

We are keen to enhance the positive impact our Centres of Warmth are having, maintain our gas safety and carbon monoxide awareness schemes and extend our services beyond the meter programme. This will protect employment and economic growth across the charity sector, maximising reach and impact.

Continued direct shareholder financial support to sector leading Cadent Foundation

Our investors have continued to support the Cadent Foundation by directly investing at least 1% of post-tax profits back into the communities we serve to deliver even further social benefit. The existence of the Foundation not only provides significant additional funding to enable us to support more customers in vulnerable situations (c.£25m in RIIO-2), but it also enables us to provide much needed services, such as in home energy efficiency improvements, that are not permitted under our regulatory guidelines.

We use the Foundation to increase the depth and range of services, but also, in line with commitment **A6 on page 37**, will use the learning from the work we do with the Foundation to feed into our blueprint for GDN services beyond the meter in RIIO-4. The flexibility of the scope of support provided through the Foundation allows us to rapidly and positively respond to the emerging Government policy framework (including Warm Homes Plan), rather than passively waiting for the policy uncertainty to unravel. For more information about the Cadent Foundation and the impact of the initiatives it funds, visit **www.cadentfoundation.com**.

Table 8: Funding requirements to deliver our RIIO-3 customer vulnerability programme, all figures in 23/24 prices

Funding	RIIO-2	RIIO-3	Notes
VCMA initial allowance	£37.0m	£84.4m	The breakdown of proposed spend is shown in our Customer Vulnerability Strategy
Repurposed FPNES	£67.3m	£0	
Personalised Welfare	£15.4m	£0	We delivered more social value than our PCD target at a significantly lower cost. These costs will be transferred to BAU in RIIO-3
BAU base allowance	£0	£23.5m	A breakdown is included in table 9
Total	£119.7m	£107.9m	

Case study

Case study 9: Centres for Warmth

Centres for Warmth is an award-winning programme working with community associations to help confront cost-of-living challenges.

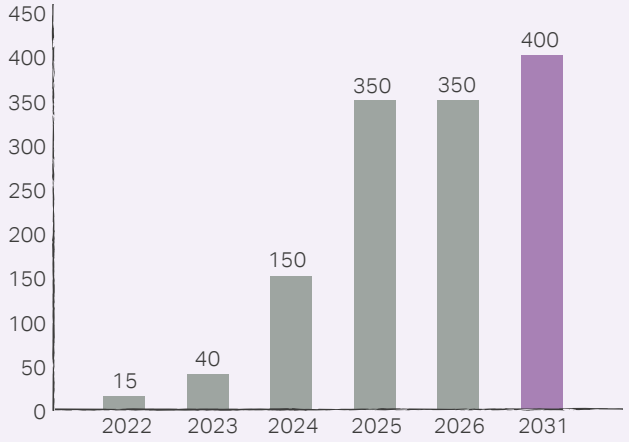
We now have 350 Centres, located in areas of high deprivation, fuel poverty and increased risk of carbon monoxide poisoning. Our charity partners operate in centres in the heart of their community promoting togetherness and social interaction. We will increase our network of centres to at least 400 in RIIO-3.

Our partnerships provide funding, resources, education and training, creating a connection between charities to expand the services they offer to vulnerable households, offering trusted advice and a lifeline for many.

2023/24 Project Highlights

- Financial savings for households – >£300m
- New jobs created – >150
- Free CO alarms Issued – 17,209
- PSR Awareness Conversations – 60,726
- PSR Registrations – 13,834
- Interventions including slow cookers and heated blankets issued – 7,494

Number of Centres for Warmth



Case study 10: Direct Access to Wellbeing Services (DAWS)

There is a huge correlation between people who are living in fuel poverty and those who are suffering from poor health.

Working with NHS charities in Birmingham, we created a brand new team who are connecting those in the healthcare system with a range of support services – so that people can leave hospital to a safe, warm and healthy home, freeing up hospital beds and preventing recurrences of health issues.

> **By working in partnership with Cadent, we can help to address health inequalities and the underlying causes of poor health, in which poverty and housing are significant factors. This will help our most vulnerable patients."**

Suzanne Cleary
Chief Officer for Strategy at Birmingham Community Healthcare NHS Foundation Trust.

Table 9: Summary of our Customer Vulnerability Strategy commitments (18/19 prices)

PSR awareness and accessibility

Delivery highlights and future commitments	2021-2026 (RIIO-2)	2026-2031 (RIIO-3)
PSR Conversations (face-to-face explanation of the PSR, its purpose and how to register)	4,000,000	5,000,000
PSR Registrations (the number of additional registrations to the PSR during the period)	400,000	500,000
PSR Customer Satisfaction (utilising the current 3 c-sat measures and extracting data related to those on the PSR)	9.5/10	9.65/10
BSI22458 – Consumer Vulnerability	Gain accreditation	Maintain accreditation
Projects delivered (the number of specific projects or initiatives funded)	32	50
SROI (per £1 invested)	£24.15	>£25
Funding	c.£13m VCMA	£6m VCMA £4m BAU Total £10m

CO awareness

Delivery highlights and future commitments	2021-2026 (RIIO-2)	2026-2031 (RIIO-3)
CO alarms Issued (free)	500,000	500,000
Children (KS1 and 2) educated	300,000	500,000
Students (university) educated	100,000	200,000
Total customer reach through initiatives	3-million	5-million
Projects delivered	17	20
SROI (per £1 invested)	£9.94	>£10
Funding	c.£18m VCMA	£2.5m VCMA £13.475m BAU Total £15m

Affordability and fuel poverty

Delivery highlights and future commitments	2021-2026 (RIIO-2)	2026-2031 (RIIO-3)
Provide advice and tools to reduce energy consumption and maximise income	3-million	5-million
Provide free one-to-one energy and income consultations	250,000	500,000
Fully funded interventions	65,000	100,000
Number of Centres for Warmth	350	400
Financial savings for customers	>£300m	>£500m
Projects delivered	50	50
SROI (per £1 invested)	£39.39	>£45
Funding	c.£40m VCMA	£39.3m VCMA £3m BAU Total £40m

Services Beyond the Meter

Delivery highlights and future commitments	2021-2026 (RIIO-2)	2026-2031 (RIIO-3)
Fully funded interventions (e.g. appliance replacements)	65,000	100,000
Customers supported through personalised welfare	400,000	500,000
Projects delivered	12	18
SROI (per £1 invested)	£24.15	>£25
Funding	c.£13m VCMA c.£12.4m personalised welfare PCD Total £25.4m	£20m VCMA £6.5m BAU Total £21.5m

C5 Maintaining minimal risk of an unplanned interruption

We will continue to deliver beyond the standards on unplanned interruptions for multi-occupancy buildings and non-multi-occupancy buildings

Continuation for RIIO-3

Non-multiple-occupancy buildings customers

We have proposed a common minimum standard across all GDNs as specified in the SSMD. We believe however, that applying network specific targets, that recognise geographical differences (e.g. proportion of MOBs) and the inconsistency of historic reporting by different GDNs, are more relevant and beneficial for customers.

Our proposed common minimum performance level is based on SGN's Southern network performance in 2022/23[7], which represents the 'minimum acceptable performance level' across all GDNs.

As stated above however, there are known issues with the consistency of unplanned interruption reported, along with regional differences, that mean network specific minimum performance levels would better deliver against the intent of this incentive.

Whilst maintaining customer satisfaction would support the continuation of minimum performance levels, we believe we can show more ambition in this space without incurring additional costs.

As such, we considered network specific minimum performance levels for our networks based on the range of performance delivered in RIIO-2 and the existing minimum performance levels.

We have proposed minimum performance levels halfway between these datapoints. For non-multiple occupancy buildings this would be:

Table 10: Non-multi-occupancy buildings minimum performance level (hours)

	Eastern	North London	North West	West Midlands
RIIO-2 Network Specific	12	14	14	13
RIIO-2 Highest Actual	6.6	12.9	9.8	8.0
Proposed RIIO-3 Network Specific	10	14	12	11

Multi-occupancy building customers

We have proposed network specific interruption targets for our MOBs customers, recognising that our London network is such an outlier in terms of the number and complexity of MOBs, with over 45% of all MOB risers and over 60% of high rise and high risk MOB risers located in our North London network. During RIIO-2 our focus has been on proactively avoiding customers being off gas as it can be time consuming to restore supplies. We will continue our industry-leading techniques and innovations to maintain supply whilst maintaining our performance if supply is interrupted above the industry minimum standard sets.

We have utilised our high-rise building plans developed in RIIO-2 to have better reactive plans in the event of the need to intervene on these assets.

C6 Keeping our cities moving

Extending the benefits of the collaborative streetworks incentive to reduce disruption in our major cities

New for RIIO-3 in networks beyond the Greater London area

The collaborative streetworks incentive which operated in our North London network and part of our Eastern network along with SGN's Southern network has demonstrated significant customer benefits, including reduced time in the road, enhanced customer communications (pre and during works), higher customer satisfaction levels and a range of environmental benefits, such as those delivered at Parliament Hill case study (Case study 11 on page 63). Having operated the process for over three years, we have had the opportunity to learn how to maximise the customer (and societal) benefits, with longer-term cross industry planning and strong engagement with local councils and town planners.

Our plan includes greater levels of mains replacement in RIIO-3 to reduce leakage and deliver a safe, reliable and resilient network. This, along with the additional levels of asset investment expected across the water and electricity sectors, places a greater emphasis for a more coordinated approach to asset management programmes.

7. We have excluded SGN Southern's performance in 2023/24 from the dataset as they received a penalty in that performance year.

Our plan proposes that we retain the financial output delivery incentive within RIIO-3 for our North London and Eastern networks and extend it across each of our other networks. We have strong support from local authorities in other parts of our networks to extend the scheme. This was highlighted at a webinar we hosted in October 2024 and the subsequent expressions of interest and support.

As new ways of working are adopted across utilities and Local Authorities, we anticipate that a more collaborative approach will ultimately become 'business as usual', and operational efficiencies will become embedded such that we might replace the financial incentive measure with a reputational measure from RIIO-4 onwards.

"Collaboration by utilities is a positive thing for our customers and our workforce. We recognise the value of collaboration as something that should be incentivised to ensure the projects are completed efficiently and innovatively."

Lee Roberts
Network Management Officer, Cheshire West and Chester

Case study 11: Collaborative Streetworks – The project at Parliament Hill

The project at Parliament Hill involved excavation and the rehabilitation of gas mains, followed by the installation of two rain gardens on top of the new mains and backfilled road.

The works were undertaken with the space of two decommissioned parking bays on Parliament Hill, in the London Borough of Camden.

This pioneering project involved collaboration between the GLA, Borough of Camden, and various contractors, and incorporated learning from over 30 utility schemes to scope, plan and deliver the work, saving 21 days of possible disruption and driving a wide range of environmental benefits.

"The Parliament Hill project shows the transformational impact of the Infrastructure Coordination Service's 'dig once' approach, delivering much needed climate mitigation faster, saving carbon, money and 21 days of disruption for Londoners."

Will Norman,
Walking and Cycling Commissioner for London

Summary of commitments

Table 11: Our output commitments for High quality service

◆ Incremental cost/revenue with this output

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
C1 Customer Satisfaction											
C1.1	**Customer Satisfaction – Emergency Response and Repair**	Common	ODI-F	Annual	Score/10	Target to be consulted on at draft determinations					9.63/2 networks in top 4 (2023/24)
C1.2	**Customer Satisfaction – Planned Works**	Common	ODI-F	Annual	Score/10	Target to be consulted on at draft determinations					8.87/1 network in top 4 (2023/24)
C1.3	**Customer Satisfaction – Connections**	Common	ODI-F (ODI-R)	Annual	Score/10	Target to be consulted on at draft determinations					9.19/3 networks in top 4 (2023/24)
C1.4	**Customer Satisfaction – Disconnections**	Common	ODI-R (ODI-F)	Annual	Score/10	Target to be set through pilot					New for RIIO-3
C2 Complaints handling											
C2.1	**Complaints Handling**	Common	ODI-F	Annual	Scoring of complaints resolution	Target to be consulted on at draft determinations					1.33/3 networks in top 4 (2023/24)
C3 Guaranteed Standards of Service (GSoP)											
C3.1	**Guaranteed Standards Of Performance (GSoP)**	Common	LO and ODI-F	Annual	GSoP 1-14	✓	✓	✓	✓	✓	Same standards, with payment levels increased annually in line with inflation
C3.2	**Overall Standards of Service (OSOS) – Connections**	Common	LO	Annual	Adherence to Standard	>90%	>90%	>90%	>90%	**>90%**	Same standards
C3.3	**Evidence for RIIO-4 review of GSoPs**	Bespoke	Voluntary	Period	Provide evidence to support review	✓	✓	✓	✓	✓	No review undertaken within RIIO-2
C4 Vulnerability & carbon monoxide awareness (VCMA)											
C4.1	**VCMA allowance**	Common	UIOLI	Period	Annual performance report	✓	✓	✓	✓	✓	
C4.2	**PSR Awareness & Acceptability**	Bespoke	VCMA Action	Period	Projects delivered	✓	✓	✓	✓	**50**	32
C4.3	**CO Awareness**	Bespoke	VCMA Action	Period	Projects delivered	✓	✓	✓	✓	**20**	17
C4.4	**Affordability & fuel poverty**	Bespoke	VCMA Action	Period	Projects delivered	✓	✓	✓	✓	**50**	50
C4.5	**Services beyond the meter**	Bespoke	VCMA Action	Period	Projects delivered	✓	✓	✓	✓	**18**	12

Summary of commitments

Table 11: Our output commitments for High quality service

◆ Incremental cost/revenue with this output

Measurement of success											
Ref.	Output	Common/ Bespoke	Output type	Annual/Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
C5 Unplanned Interruptions											
C5.1	**Unplanned Interruptions – Non-MOB Minimum Performance Level**	Common	ODI-F	Annual	Average Duration – Hours	10*	14*	12*	11*	**n/a**	EN 12/LN 14/NW 14/ WM 13
C5.2	**Unplanned Interruptions – MOBs Minimum Performance Level**	Common	ODI-F	Annual	Average Duration – Hours	454	593	342	467	**n/a**	EN 518/LN 601/NW 601/WM 601
C6 Collaborative streetworks											
C6.1	**Collaborative streetworks incentive**	Common	ODI-F	Period	No. of projects delivered	✓	✓	✓	✓	✓	Incentive limited to Eastern and North London (plus SGN – Southern)

*Note: Our proposal for an industry common Minimum Performance Level is 15 hours (as shown in BPDT M8.07), based on the highest RIIO-2 annual average duration seen across all GDNs where a penalty hasn't been applied. However, we believe there are reporting inconsistencies across companies as well as regional differences that impact the duration of interruptions reported. As such, RIIO-2 reported data is not comparable and we would advocate the use of network specific Minimum Performance Levels.

Managing uncertainty and protecting against non-delivery

Uncertainty Mechanisms proposed

There are two common uncertainty mechanisms (specified in Ofgem's SSMD) that are relevant to this outcome area and we are proposing one new common measure in relation to the uncertainty and around the volume of customer disconnections from the network and potential policy changes around what is required and who pays for the disconnection activity from HSE, Ofgem and DESNZ policy development. We look forward to working with Ofgem to develop these further prior to Draft Determinations.

Table 12: Summary of uncertainty mechanisms proposed for High quality service

Ref	Area of uncertainty	Proposed mechanism for RIIO-3	Common/Bespoke	Where discussed in our plan
UM.C.1	New Large Load Connections	Re-opener	Common	N/A (We agree with SSMD scope)
UM.C.2	Specified Streetworks	Re-opener	Common	N/A (We propose for the scope to be consulted on at Draft Determination)
UM.C.3	Volumes of disconnections delivered under the Gas Safety (Installation and Use) Regulations	Volume Driver	New Common	BPDT M8.14 Commentary section 2.2.3

Ensuring our plan is deliverable

We have tested the deliverability of our commitments in this area with a predominant focus on:

1. Practical achievability of the proposed output commitments.
2. Skilled resource availability underpinned by our workforce and supply chain strategy, linking delivery with ED&I targets we have set.
3. Partnerships potential to scale to deliver vulnerability ambitions combining our experience with that of our delivery partners to ensure deliverability.
4. Local authority ability to support collaborative streetworks strategic schemes.

System efficiency and long-term value for money

We set out the expenditure required to deliver the outcomes our customers and stakeholders desire for RIIO-3, and is required to meet our statutory obligations. We describe the key changes in spend from RIIO-2, the drivers behind these costs and how we have ensured the efficiency of our plans to deliver long-term value for money for customers. We also show how the enabling strategies for data and digitalisation and innovation underpin the plan. Finally we explain how we propose to manage uncertainty and protect consumers from non-delivery.

In this section

Primary references to other parts of the plan

Appendices

- Appendix 3: Cost assessment and benchmarking approach
- Appendix 8: Innovation strategy
- Appendix 14: Digitalisation strategy
- Appendix 17: Workforce and supply chain resilience strategy

Investment decision papers

- Online document library for Investment decision papers

Supporting documents

Appendices

- Appendix 4: Cyber Resilience Business Plan
- Appendix 9: IT & Telecoms strategy
- Appendix 11: Stakeholder engagement and decision log

Shaping our plan – insight to ambition

Our RIIO-3 plan builds on our networks setting the industry benchmark for RIIO-2 and the challenges of delivering against the stretching cost allowances set by Ofgem.

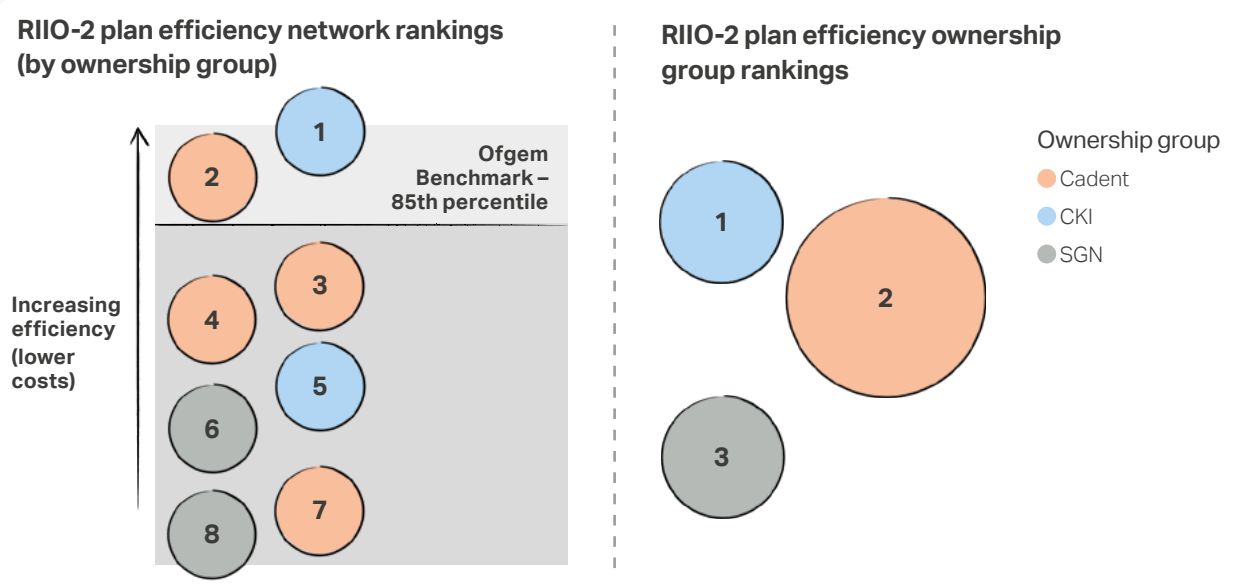
Delivering efficiency and value for money in RIIO-2 – organisational and cultural transformation

In RIIO-2 we committed to transform the efficiency of our business through £500m of efficiency savings (in 2018/19 prices, c.£625m in 2023/24 prices). Our networks set Ofgem's industry benchmark efficiency level as shown in Figure 22.

We have delivered on our ambitious RIIO-2 business plan by transforming our organisation and changing the ways we work to drive cost reductions and improve our output delivery for our customers. Specifically, we have:

- finalised our organisational transformation to a depot-centric operating model bringing day-to-day decision making closer to our customers and their needs.
- transformed our delivery model for replacement works to implement local delivery partners and use of smaller Contract Management Organisations to focus on ensuring delivery of these critical works in line with our regulatory commitments.

Figure 22: Our RIIO-2 plan set Ofgem's catch-up efficiency benchmark*



*Post the Competition and Market Authority RIIO-2 Determination

- Strengthened our data and management information capabilities and use of cross-network benchmarking and sharing of best practise. We not only apply this healthy competitive tension within Cadent, but also across our suppliers.
- Adopted new and innovative technologies to reduce interruptions to our MOBs customers by allowing us to keep supplies running while we undertake repair activities. A prime example of this is utilising the NuFlow innovation.

> **"Our efficiency transformation has been enabled by putting decision-making closer to our customers through a depot-centric operating model."**
>
> **Howard Forster**
> **Chief Operating Officer, Cadent**

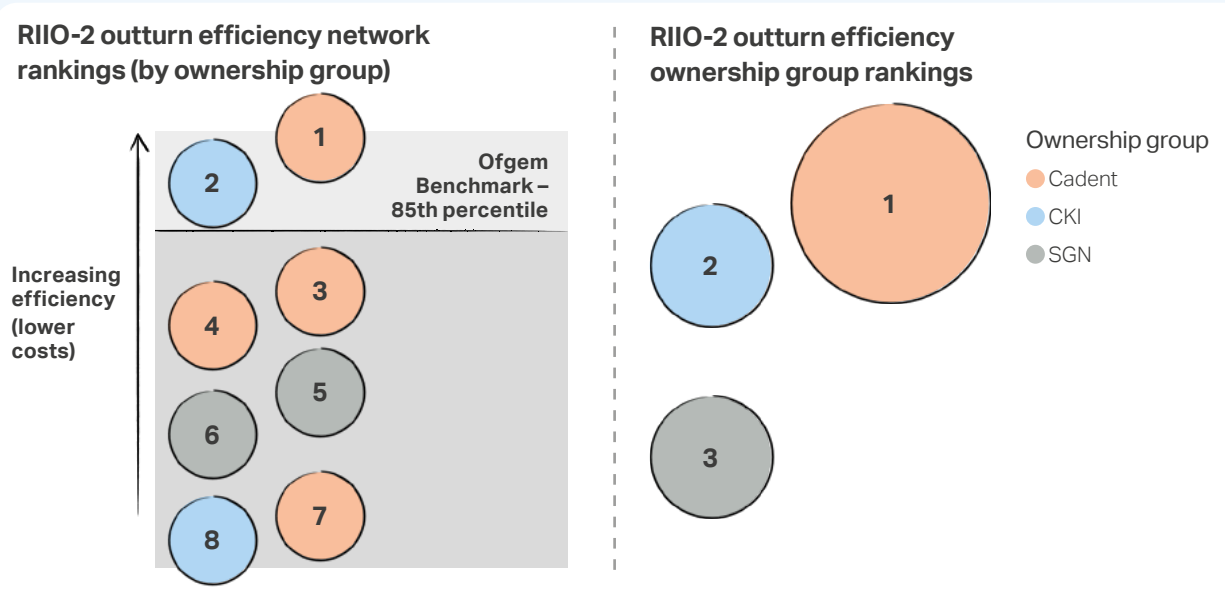
Whilst these transformational changes have delivered our committed efficiency plans for RIIO-2, we have seen evolving asset health risks which have not been funded in RIIO-2, such as our extensive governor improvement programme. The period following the setting of the RIIO-2 price control has been turbulent economically, with a global pandemic, economic contraction and now a prolonged recovery alongside growth in resource competition, all putting upward pressure on our costs within the period.

These factors have made it particularly challenging to meet the additional c.£450m of disallowance (post the Competition and Markets Authority outcome) applied by Ofgem to our RIIO-2 business plan. We are forecasting that we will overspend our allowances by around £420m over RIIO-2. In addition, our outturn costs have continued to show that the unique environment that we face in operating our North London network, is not reflected fully in Ofgem's cost assessment methodology. And lastly, we have identified that there are also specific regional cost differences for parts of our Eastern network.

We have not stood still, however, and we continue to proactively refine our organisational structure and leverage native competition across our networks through improved data and analytics.

We have benchmarked our costs using a suite of regression models, which build on the totex regression model utilised by Ofgem at RIIO-2, to assess our efficiency position over the RIIO-2 period based on actuals and latest reported forecasts. Our in-depth modelling approach shows over the RIIO-2 period that our networks are expected to set Ofgem's defined efficiency benchmark and we also expect to rank first in efficiency over the two other ownership groups. This work has also revealed that the majority of the benchmark gap for our North London network can be explained through the need for greater recognition of regional factors than at RIIO-2, and that there is need for greater recognition of regional specific factors such as regional pay that should be applied to our Eastern network before normalised comparison. See Appendix 3, page 35 Cost assessment and benchmarking approach.

Figure 23: Our updated analysis shows we are the most efficient ownership group, and have three of the most efficient networks, based on reported performance over RIIO-2



To accompany this top-down assessment of our costs we have also sought specialist assurance and benchmarking for specific areas in our plan due to their materiality and where they involve new activities of increased costs than at RIIO-2. For example, our IT and Telecoms spend forecast has been externally assessed and assured by Gartner.

These efficiencies have been locked in and embedded in the underlying RIIO-3 base costs

We have embedded the expected unit rates at the end of the RIIO-2 period including all the ongoing efficiency we have and will continue to deliver over the last two years of RIIO-2. Given our customers' need for affordable bills, we have also sought to target investment only where it is required to deliver mandatory or legislative requirements or where we believe there is a clear cost benefit for current or future customers. In addition, we have in some cases, constrained proposed spend so as not to increase from RIIO-2 levels even if a cost benefit would suggest we could spend more. This is provided this is not impacting on meeting legislative requirements or creating risks on safety, security or resilience (this can be seen in some of our Investment decision papers.

Delivering further efficiency and value for money in RIIO-3 and beyond – technology enabled delivery

To deliver further efficiency in RIIO-3, we believe that through working in collaboration with technology and supply chain partners we can leverage new technology to change the way our industry operates. This will deliver a more proactive intervention approach to reduce unplanned work volumes, and will augment the excellent productive efficiency we have driven in delivering reactive work.

We have sourced technology and ideas from outside the sector and across the world to explore what could be done to proactively address issues before they occur. We have built partnerships with high-performing utilities and global tech-providers in the gas sectors to share best practice and leverage learning from other markets which we are then able to apply in the UK. We have shared our research through our two global technology events and showcased the new technologies we have brought into the UK such as Italgas's approach to advanced leak detection as well as robotic technology such as CISBOT from the US. These innovations have been sourced from BAU innovation outside of Ofgem's RIIO-2 innovation framework which instead has been focused on the specific sectors of vulnerability and the future energy transition. This work, which we have badged as 'Ops 4.0' is outlined in the Innovation strategy, Appendix 8, page 30.

This has enabled us to commit to a stretching £197m of additional ongoing efficiencies in our future cost proposals for RIIO-3 and, by further developing and deploying these technologies through RIIO-3, our aim is to create a lower cost network for future price controls and beyond by proactively reducing unplanned work.

We have provided clear and transparent data to enable Ofgem to make a fair assessment of costs

- We have identified the areas of the plan where we think comparative benchmarking would not be robust and hence areas should receive a separate non-regression or technical assessment.
- We have analysed our costs against different external data and across our own networks and present updated regional factors for our networks which we believe are crucial to enable a robust comparative assessment. The proposals are summarised in Table 13 below.
- Based on updated data, the quality of Ofgem's RIIO-2 benchmarking model has diminished, which is important to take into account in determining what level to set the efficiency benchmark at. We have provided clear and compelling evidence for model improvements through new cost drivers (including density) which should be taken into account in Ofgem's cost assessment process.
- We have provided analysis to support our projection of achievable ongoing efficiency over RIIO-3 drawing on wider industry experiences and economic data.
- We have proposed new indices and weighting for real price effects to better relate to gas distribution spend profiles which will enable a more accurate reflection of costs as the control progresses.

Table 13: We have evidenced material regional and company specific factors to be incorporated into RIIO-3 cost assessment

	Conditions faced by London utilities			
Factor claim (£m, RIIO-3 period)	1. Labour Costs	2. Nature of Streets	3. Network-Specific Factors	4. Sparsity
North London	208	180	30	
Eastern	31	13		10
North West				5
West Midlands				3

Cost drivers and total expenditure (totex) forecasts

What drives the needs case for workload?

As per the business plan guidance, we have ensured our plans meet the relevant legislative requirements, in particular providing capacity to meet a 1 in 20 peak demand level and the requirements of our Safety Case. As required by Ofgem, we have tested the plans against the FES Holistic Pathway and the FES Counterfactual. Given the predominant non-load nature of our proposed RIIO-3 spend, the only areas that would be affected by the use of the scenarios are connections, disconnections and load related reinforcements. For all these areas we have proposed uncertainty mechanisms to protect consumers from changes from our base plan assumptions as we move down different energy pathways.

We have utilised Ofgem's cost benefit analysis guidance of ensuring a 16-year payback for any non-mandatory investments which further protects consumers with no regrets interventions. In addition, in some cases we have constrained the solutions so as not to increase spend from RIIO-2 levels even if the cost benefit might suggest greater spend provided this does not impact on safety, security or resilience. See Pre-heat Investment decision pack.

What drives the total expenditure requirements?

There are three key cost drivers that underpin our total expenditure requirements (totex). These are:

1. The volume of work required.
2. The specific type of work required.
3. Price/unit cost pressures.

We have also identified six areas, which we use in Figure 24, to group the drivers of the material changes between RIIO-3 and RIIO-2.

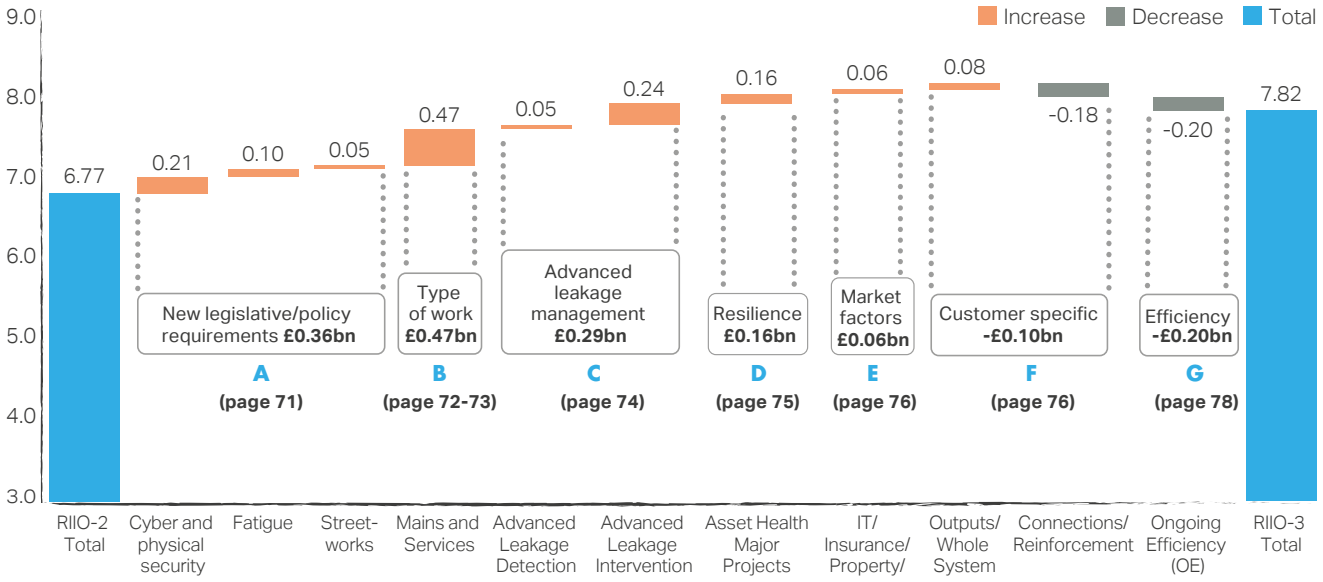
Key controllable totex movements from RIIO-2

We plan to spend 7.82bn over RIIO-3 (which includes an assumed 0.5% p.a. of ongoing efficiencies). This is a 16% increase on expected spend over RIIO-2 (£6.77bn).

Figure 24 shows the key totex movements from RIIO-2 and we provide an explanation for each of the material changes, identifying and discussing the drivers behind them.

Figure 24: Totex overview for RIIO-3 and changes from RIIO-2 spend

£bn 2026-2031



A. New and evolving legislative/ policy requirements

Maintaining cyber and physical security (eCAF)

Change from RIIO-2 (£210m) driven by volume and type of work required

In the ever-evolving cyber-threat landscape, we, like other operators of essential services, are working towards meeting the enhanced Cyber Assessment Framework (eCAF) developed from the Network and Information Security Regulations. Alongside activities to improve the security of our Information Technology (IT) and Operational Technology (OT) infrastructure our plan also includes works to further bolster the physical security of our networks both to physical and cyber-attacks. Our plans include targeted expenditure to further improve our physical security in line with DESNZ requirements to ensure that we can continue to deter those who wish to cause harm, detect when we are attacked and delay a further attack. This includes a programme of works on Category 3 Critical national infrastructure designated sites (contained in a major project justification paper as per business plan guidance).

Our expenditure plans for RIIO-3 are set out in Appendix 4 – Cyber Resilience Business Plan and Appendix 9 – IT & Telecoms strategy.

Ensuring compliance with fatigue legislation

Change from RIIO-2 (£100m) driven by volume and type of work required

We are legally required to manage fatigue risks for our employees. Over the course of RIIO-2, all Gas Distribution Networks (GDN) have been in active engagement with the HSE to develop fatigue management policies in line with the Health & Safety at Work Act, Working Time Regulations, and other supporting regulations and HSE guidance, This legislation governs aspects of working practises including the length of a maximum working days and rest time between shifts. As a result of this engagement, new requirements have emerged and are driving additional costs as the industry is having to make changes to working hours and shift patterns. This leads to changes in the resourcing approach and contractual terms and conditions required to discharge, in particular, our emergency, repair and maintenance activities. GDNs have agreed common principles to adopt to ensure a consistency of approach which has been applied in the latter years of RIIO-2 and will roll forward into our plans for the full RIIO-3 period, hence driving a material delta to RIIO-2 spend.

Efficiently managing streetworks costs

Change from RIIO-2 (£50m) driven by volume and type of work required

For RIIO-3 our forecast streetworks costs are expected to increase relative to RIIO-2 for three key reasons:

- An increase in the volume and location of the work to be delivered in RIIO-3 (as described in Safe, Secure & Resilient supplies chapter).
- Evolving streetworks legislation – Over the RIIO-2 period we have seen significant increases in the number of permitting and lane rental schemes in place across all our networks, a trend we expect to continue in RIIO-3.
- Changes to Local Authority conditions and their application. We have seen a greater propensity for charging as well as increased levels of charging by some Local Authorities/Highway Authorities as they mature their operational approaches of managing schemes. These impacts will only continue into RIIO-3 and we have forecast expected known schemes into our baseline totex forecast.

Given these latter two areas are likely to evolve, the proposed streetworks reopener will enable any future changes to be reflected.

B. The Iron Mains Risk Reduction Programme (IMRRP)

Change from RIIO-2 (£470m) driven by specific type of work and price/unit cost pressure

The remaining programme

Over RIIO-3, we will continue to deliver our mandated programme to replace all 'Tier 1' iron mains and services within 30 metres of a property with polyethylene pipes. The mandated programme is reaching its final phase and is set to finish on 31 December 2032. Figure 17 on page 31 shows our proposed phasing of this workload to ensure we deliver before the statutory deadline. Compared to RIIO-2 the volume of work is broadly the same as what we expect to deliver over RIIO-2 (RIIO-3 1,554km p.a. v 1,568km p.a. in RIIO-2).

As we are approaching the end of the programme, we know what replacement work we need to undertake, where it is and the conditions we need to navigate to undertake the work. The remaining work is a function of the directions and guidance we have received from the HSE and the incentives we have been following throughout previous price control processes from Ofgem.

For example, the requirements and guidance on the prioritisation of which pipes to replace has been modified by the HSE over time such as the material change to the three-tier framework in 2013 which changed the requirements around larger diameter Tier 2 and Tier 3 pipes. This coincided with the start of RIIO-1, where Ofgem changed the incentive framework to strongly encourage removal of the highest risk pipes for the lowest cost. The change in the focus around Tier 2 and Tier 3 pipes also impacted stranding of stubs which connect Tier 1 and Tier 2 leading to the need to rectify these in a different way. This is explained in more detail in Appendix 3, pages 12-14.

Table 14: The unit cost of Tier 1 iron mains replacement will increase for RIIO-3 (£m, 23/34 prices)

	RIIO-2	RIIO-3	% change
Eastern	£252	£295	17%
North London	£374	£435	16%
North West	£239	£288	21%
West Midlands	£247	£291	18%
Cadent	**£272**	**£323**	**19%**

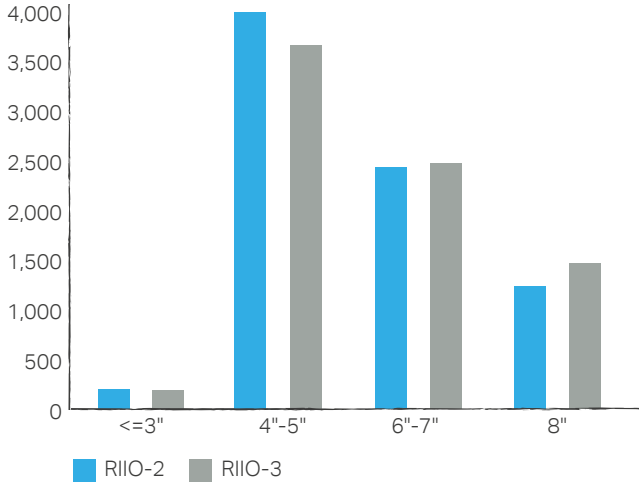
Change in average unit costs

There is a change to the average pipe size and complexity of the work required in RIIO-3. These factors, together with supply chain and market pressures, are expected to increase the costs we must incur to deliver this critical safety-driven work, with our unit costs forecast to increase by **19%** from those seen on average in RIIO-2.

There are four main factors driving these increases:

- **Type of workload – diameter of pipes:** we will replace a bigger proportion of larger diameter pipes (for example more 8" and less 3"). Figure 25 shows the change in mix. Replacing larger pipes incurs higher planning and material costs, requires more costly open cut over insertion work, and are in more challenging environments (road surfaces and access).

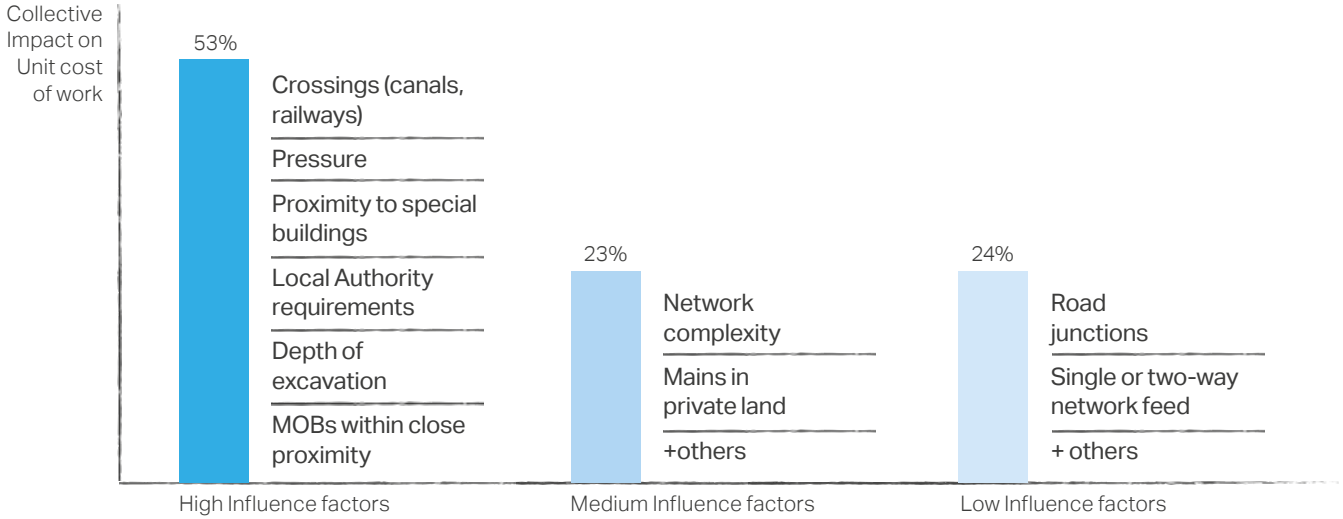
Figure 25: The profile of Tier 1 mains replacement volumes is more weighted to larger diameter pipes in RIIO-3



Complexity of working conditions: We have improved our data, and built a database of information on remaining replacement works down to a pipe-by-pipe level, to understand the working conditions and complexities associated with delivering future required replacement work. This has been used to inform the projected unit costs for each network. We forecast a higher level of complexity in the remaining work mix in our North London and North West networks compared to our work in West Midlands and Eastern. The key factors considered are shown in Figure 26.

- **Supply-chain pressures:** We are already seeing increased competition for labour to deliver our mains replacement work in RIIO-2, for example from within the sector as other GDNs are looking to accelerate work to manage backlogs. For RIIO-3 we expect this to continue with fibre broadband rollout, the projected significant investment programmes from the water PR24 price control and the continued impact of construction of the HS2 rail line. This contributes to increased unit rates as demand outstrips supply. We have looked to mitigate this as much as we can through our Workforce and supply chain resilience strategy (Appendix 17, page 23).
- **Other external factors:** Above inflation price increases for materials integral to mains replacement delivery have put pressure on our unit rates in RIIO-2 and are expected to persist into RIIO-3. Concrete and tarmac prices in particular have been impacted by suppliers passing on the cost of more stringent regulations, such as the change from red to white diesel in 2022 in response to environmental emissions targets and ensuring compliance when operating in low emissions zones, and adherence to increasing local authority traffic management and permit requirements has added further strain to our rates.

Figure 26: Key factors influencing the complexity and cost of replacement work



Additional replacement required for multi-occupancy buildings

Our replacement activities also include metallic assets servicing gas to our customers living in multi-occupancy buildings (MOBs). In 2018, the Building Regulations were amended to ban the use of combustible materials on buildings over 6-storeys or 18 meters in height. In collaboration with the other GDNs, we have developed a risk assessment to be used to consider the safety of polyethylene risers on all MOBs and through this assessment we have identified some targeted work requirements. This incremental scope of activity contributes to an increase of £21m of forecast spend in our RIIO-3 plan, mostly confined to our London network, which has considerably more MOBs than our other networks.

C. A pioneering Advanced Leakage Management approach

Advanced Leakage Detection and a Digital Platform for Leakage Analytics

Change from RIIO-2 (£53m) for rollout of Advanced Leakage Detection and a Digital Platform for Leakage Analytics driven by volume of work

Current emission calculations rely on the Ofgem-approved Shrinkage Leakage Model (SLM), which whilst supporting significant reduction in leakage over previous controls, lacks the granularity to effectively target our interventions on the highest emitting assets. To address this, we initiated the Digital Platform for Leakage Analytics (DPLA) project, a Strategic Innovation Fund (SIF) initiative, utilising advanced sensor technologies, machine learning, and hydraulic modelling to provide real-time, granular leakage data. This enables strategic leak repair prioritisation, improved asset management, and enhanced network safety.

The DPLA project's Beta phase, launched in 2023, focuses on developing a probabilistic hydraulic model, leveraging machine learning to analyse various data sources. This improved data analysis will enhance emission reporting accuracy for the industry (a key ask from gas shippers through the existing Uniform Network code forum) and enable more precise annual reports. The DPLA also provides key analytical power to support more targeted intervention (see the next section).

The project is on track for completion in June 2025, initially focusing on the North London and East of England networks. Deployment of Advanced Leakage Detection vehicular and fixed sensor technologies is underway, in line with the Health and Safety Executive (HSE) mandate for annual asset monitoring by April 2026, and will be rolled out over all of our networks by 2028. The total project cost is estimated at c.£53m, with tangible benefits expected from the first year of RIIO-3, playing a key role in our proposed Advanced Leakage intervention programme and wider environmental objectives. The costs for RIIO-3 are summarised in Table 15.

Table 15: Summary of RIIO-3 spend to roll out Advanced Leak Detection and the digital platform

£m	Opex	Capex	Totex
Tools & Equipment		32	**32**
Data & Digitalisation	5		**5**
Asset Management	16		**16**
Total ALD	**21**	**32**	**53**

Advanced Leakage Intervention Programme

Change from RIIO-2 (£240m) for Advanced Leakage Intervention programme driven by volume

Building on data and insight from the advanced leakage detection technology, we have assessed a range of options to assess the cost benefit of further intervention to reduce leakage beyond the Tier 1 iron mains replacement programme (Case study 5 on page 46).

As well as the cost benefit outcomes, we also factored deliverability considerations such as the supply chain requirements and required phasing to successfully complete the work.

We are proposing a targeted intervention programme of 750km to deliver an additional 10% reduction of emissions by the end of RIIO-3 and a whole life net benefit of £420m by 2050.

The profiles and location of work has been informed by the advanced leakage detection technology rolled out in our North London network in RIIO-2 and leveraging the digital advanced analytics to identify our predicted 'leakiest assets'. The programme targets these assets to maximise benefit from our interventions and deliver a 10% greater gross reduction in observed leakage than would be achieved if we just undertook the Tier 1 and Tier 2A iron mains replacement work. The programme has a cost benefit payback within Ofgem's defined 16-year criteria and delivers significant societal benefit of £420m over whole life use of the assets.

This evidence-based intervention programme delivers leakage reduction which can be refined within period as the Digital Platform for Leakage Analytics becomes more available, but also has the dual benefit of materially reducing the safety risk from these assets which are not currently addressed under the Tier 1 iron mains replacement programme. Hence, it provides a trailblazer for how this approach could be rolled out across the sector in future periods as we move beyond the completion of the IMRRP.

D. Resilience

Overall change from RIIO-2 across all elements £160m

All sub areas have overlap with legislative/licence requirements driven.

Delivery of new and continued major unique and atypical projects

Within our plan we have identified programmes of work which either meet Ofgem's criteria for major project justification, or we are proposing a price control deliverable to protect consumers from non-delivery and/or are atypical.

Some of these projects are continuations from RIIO-2, others are new requirements as shown in Table 16.

Asset health interventions (including Network Asset Risk Metrics)

Section A2 of the Safe, Secure and Resilient Networks chapter explains that there have been some changes in the scale of interventions required across our major asset families to manage asset health deterioration. We have, however, looked to constrain spend to RIIO-2 levels where possible to ensure affordability. In addition, there are some large reductions in work in other asset classes given the work we have completed in RIIO-2, such as through as our extensive governor improvement programme. Hence underlying spend is reducing outside of the major projects discussed in Table 16.

Table 16: There are a number of major or atypical projects in RIIO-3

Project & Network	Description	Cost forecast	Summary
Capacity Upgrades ALL	Continuation of Network Capacity upgrades	£20m*	Interventions on sites where we forecast under capacity by the end of the RIIO-3 period.
FWACV Compliance ALL	Continuation of fiscal metering programme addressing metering obsolescence & risk	£56m	Completion of investment in Offtake metering per improvement plan agreed with the UNC Performance Assurance Committee. 28 sites to be completed in RIIO-3
Tinsley Viaduct EN	New project to address failing IP pipeline beneath the Tinsley M1 Viaduct – RIIO-2 identified project	£29m	Remedial intervention to twin pipeline and feasibility for diversion completed in RIIO-2. Safety and security of supply investment to the sole feed dual IP mains on the viaduct
West Winch Pipeline EN	New Project to address deterioration on LTS pipeline with single source of supply	£11m	Failures to the High Pressure pipeline over the previous regulatory periods require permanent longer-term intervention to manage the safety and security of supply to this network
London Medium Pressure Scheme NL	Continuation of RIIO-1 & 2 programme to address resilience of London network	£89m	Replacement of high-risk Iron Mains within London and create and improve resilience of Medium Pressure/ Intermediate Pressure network
Grays Medium Pressure NL	Continuation of RIIO-1 & 2 programme to address resilience of London network New Project to address steel medium pressure network	£25m	Replace 42.6km of medium pressure Tier 1 & 2 steel mains in the Grays area of North London

*This includes interventions at 8 sites and feasibility and design at a further 5 sites. Our Price Control Deliverable just includes the 8 sites to be upgraded (£18.68m).

For assets covered by the Network Asset Risk Metric, more information on specific interventions can be found in the NARM data table commentary. For other assets, cost information can be found in the relevant Investment decision papers.

E. Market Factors

Change from RIIO-2 (£60m) driven by price/ unit cost pressure

There are a number of market related cost pressures surrounding maintaining the services underpinning our customer outcomes. These collectively drive a delta to the costs we saw on average in RIIO-2.

The key elements relate to:

- Increased insurance premiums for our property and business operations driven by general insurance market trends.
- Increased market related rental costs for our property.
- Increased market related increases in licence costs for IT software.
- Higher average vehicle costs.

F. Customer & stakeholder driven outputs (including new output commitments)

Outputs and whole system planning Customer/Stakeholder driven or output related costs

RIIO-3 Costs £80m in base driven by volume and type of work

We have indicated in the previous commitments sections where customer or stakeholder requirements for new outputs have driven incremental cost/resources. The table below summarises what has been included in the base plan.

Table 17: Output-related costs not covered in other areas

Output[8]	Common/Bespoke/EAP	Relevant outcome area	Incremental cost/resources in base
Climate resilience strategy	Common	Safe, secure and resilient supplies	£0.3m
Workforce resilience metrics and actions	Common	Safe, secure and resilient supplies	£2.8m
EAP Actions, Biodiversity surveying, carbon emissions measurements, Nature based solutions and partnerships	EAP	Infrastructure fit for a low cost transition to net zero	£1.2m
Facilitating whole system planning[8]	EAP	Infrastructure fit for a low cost transition to net zero	£24.7m
Facilitating biomethane connections	EAP	Infrastructure fit for a low cost transition to net zero	£0m (uncertainty mechanism proposed)
VCMA funding realignment into base	Common	High quality service	£23.5m
Data & Digitalisation investment[9]	Common	All commitment areas, Data & Digitalisation Strategy and IT/ Telecoms strategy	£26m

8. Further detail and references to data tables can be found in the Bespoke, uncertain or separable output table.
9. This number does not include the elements relating to DPLA and expanding data users (referred to in Table 20) as they are covered in the other totex item C (see page 74).

Facilitating whole system planning

We are investing in additional resources to support new strategic planning organisations such as the National Energy System Operator (NESO) and Regional Energy System Planners (RESPs) – which will form key interfaces in creating national and regional whole system energy plans and developing policy for implementation. Our plan includes investment in the capabilities required to support these organisations as well as broader local, regional and national stakeholders to assess and determine future energy pathways based on robust evidence. We have the greatest number of regional interfaces and number of customers to serve across Great Britain given our scale. We have based our projected requirements on those that Ofgem have funded for the most similar organisation, UKPN, which will enable us to leverage the innovations of digital analytics such as the Future Energy Explorer (Case study 7 on page 49).

Facilitating a step change increase in the connection of biomethane resources to the network

Our Environmental Action Plan signals the potential for a material increase in biomethane connected to our network over the coming regulatory period with the potential for up to 15TWh of biomethane production connected to our networks by 2032.

To enable this, we will ensure we are able to offer sufficient capacity to inject more biomethane into our networks and over RIIO-2 have been proactively working with other networks and Ofgem to amend charging approaches so that the costs of reinforcing the network to take increased volumes do not act as a barrier to biomethane use. At this stage, we are not able to accurately predict which parts of our network will require reinforcement, and cost, for additional capacity, as this depends on the location of specific biomethane production sites. The charging proposal would see up to £2m per connection application being socialised with any excess provided by the connectee. However, not all connections will require works. We are therefore proposing an uncertainty mechanism to provide extra funding when needed.

Data and digitalisation investment

Table 20 on page 83 and 84 in the Data and Digitalisation section sets out what we are planning to invest to further develop our maturity against the Data Best practice guidelines and to support the three key themes of our strategy of Interoperability, Data and Digital literacy and Open Data.

Effectively managing customer connection & disconnections requests

Change from RIIO-2 -£180m driven by volume

Connections – We have forecast that the volume of connections will fall over RIIO-3 due to a gradual rise in customers switching to electrified solutions rather than gas boilers. In addition, the proposed change to remove the Domestic Load Connection Allowance (DLCA) from April 2026 will mean that connecting customers will now pay the full cost of connection and hence there will be no residual costs to fund through the totex allowances, hence the totex associated with connections falls from £158m in RIIO-2 to zero for RIIO-3.

Disconnections – for the base plan, as directed by Ofgem, we have agreed a common assumption across the GDNs to roll forward current trends of both customer-requested disconnections which are directly charged and supplier-requested cut-offs under the Gas Safety (Installation and Use) Regulations which are funded through base totex. We have proposed a volume driver to take account of any increases in this trend over RIIO-3, and a reopener to reflect any policy changes that follow for Ofgem/DESNZ/HSE reviews of the processes around disconnections and how costs should be charged or socialised across customers.

Reinforcement (not related to biomethane) – We have included a reduction in requirements for general reinforcements given the overall expectation that demand will not increase.

G. A stretching ongoing efficiency challenge of £197m embedded in the plan

Additional to the embedded efficiencies delivered and embedded from RIIO-2 driven by price/unit cost pressure

On top of the embedded efficiencies within our plan, we are also putting forward an ambitious ongoing efficiency assumption of 0.5% per annum, equating to further efficiencies of £197m over the RIIO-3 period.

We have also rerun the methodology that Ofgem used to underpin the 1% ongoing efficiency determination for RIIO-2 with updated data and this shows that an estimate of 0.5% would be at the top of the range. Hence this shows the stretching ambition in our proposal.

This assumption is also corroborated by an external benchmarking report we, alongside other gas networks, commissioned from Economic Insight (EI) which draws on a range of data sources to identify a plausible range of assumptions for gas networks. EI's recommended a range of assumptions between 0.2-0.8% per annum with reasons set out for why a point to the lower end of the range would be appropriate.

Other highlights from controllable costs and non-controllable costs

We have set out the changes in expenditure between RIIO-2 and RIIO-3 in the main sub-categories of controllable totex of opex, capex and repex in the relevant data table commentaries. These highlight the reasons for movement for additional elements not already covered by the explanation of the totex trace to avoid duplication. The commentaries also include explanations of non-controllable costs. A summary table of totex is shown in Table 18.

Table 18: Cadent total expenditure summary

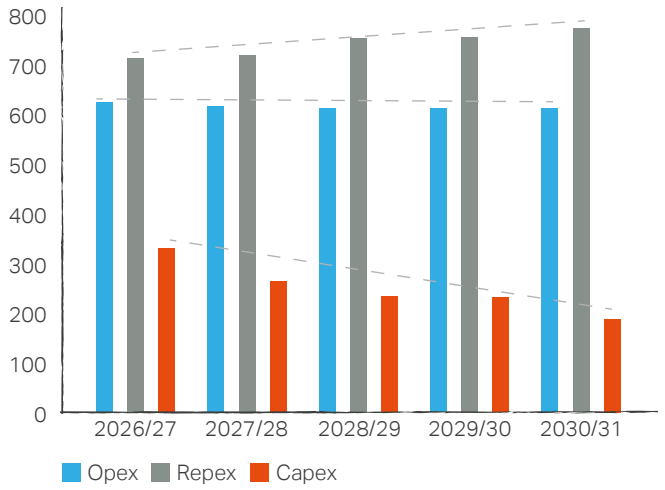
£m	RIIO-2	RIIO-3	Var
Controllable Totex	6,773	8,020	
Ongoing Efficiency	(21)	(197)	(176)
Net Totex	**6,752**	**7,823**	
Non-Controllable	2,329	2,307	(22)
Total Funded Costs	**9,081**		

Phasing of expenditure over RIIO-3

The majority of totex costs through RIIO3 follow a flat and stable profile, with the following exceptions:

- Physical Security spend is concentrated in the first two years of RIIO-3 because it is imperative that we act as soon as possible to protect our assets in line with DESNZ specifications.
- IT & Telecoms cyber security related spend peaks in years one and two of RIIO-3 due to the need to work towards consistency with the enhanced cyber assessment framework requirements by 2027.
- The initial investment in advanced leakage detection technology is forecast in 2026/27 alongside the work to complete the roll out of the Digital Platform for Leakage Analytics across our networks.
- Vehicle related capex costs for converting and fitting out new vans are incurred in line with our vehicle replacement cycle, which is determined by the expiry date of vehicle leases and therefore fluctuates over the RIIO-3 period.
- The timing of repex and underlying capex spend (excluding the above noted items) is aligned to projected workload delivery, which has been scheduled after taking into account deliverability and supply chain considerations.

Figure 27: The phasing of our expenditure over RIIO-3 varies by the type of spend



Innovation supporting efficiency and long-term value for money

Our plan includes a targeted innovation programme leveraging the benefits of innovation from RIIO-2 and refining the key focus areas for RIIO-3 to align with the four key customer outcome areas

Our Innovation strategy (Appendix 8) builds on the work we have undertaken in RIIO-2 and sets out how we have taken the insight from engagement with multiple stakeholders from across the world to identify the target focus areas for RIIO-3 innovation. We have aligned our plans to Ofgem's four RIIO-3 outcome areas.

We have outlined plans to invest c.£21m through the Network Innovation Allowance for RIIO-3 which is roughly half of the allowance we received for RIIO-2. The reduction is driven by the fact the RIIO-2 plan included significant costs for the work to support the HSE's assessment of the technical and safety evidence for hydrogen repurposing which is now largely complete. We continue, however, to focus on providing innovation into how the gas network might be repurposed or transitioned for net zero in our RIIO-3 plans.

We also have identified areas where we can leverage the Strategic Innovation Fund, for example in working with Electricity Distribution Networks Operators to further explore the practical implications of customers switching from gas to electrified heat and how such a transition would take place and ensure their peak requirements can be securely met.

Our continuous improvement methodology described as 'Operations 4.0' shows how we plan to roll out and embed the innovations across our operations and we also detail how we are continuing to develop collaboration with the innovation supply chain and academia to develop and implement new solutions.

How our innovation strategy and priorities align to the four outcome areas

Safe, secure and resilient supplies:
Through a mixture of our Totex allowance, digitalisation funding, the NIA for climate resilience, and external funding streams, we will develop innovation projects that support the operations in operating a safe and resilient network. Examples of focus areas for RIIO-3 are:

- Network resilience modelling – digital modelling capabilities.
- Workforce resilience – supporting inspections and training.
- Climate resilience – assess cross industry dependencies.
- Shrinkage and fugitive emissions – continued focus on reduction of emissions.
- Field sensors – asset data and monitoring capabilities.
- Predictive analysis – improved use of data to predict network anomalies.

Our two global technology conferences have showcased innovation and data and digital solutions from across the globe

Cadent Global Technology Conference

Infrastructure fit for a low-cost transition to net zero

Utilising our BAU Totex, NIA, SIF (for medium and larger initiatives) and possibly external funding streams, we will explore:

- Network resilience and climate resilience – understanding climate threats and how we should change the way we model risk of service failure.
- Optimising disconnections and decommissioning – exploring the regulatory, safety and cost implications of disconnections as well as optimisation opportunities for decommissioning.
- Net zero and low-carbon construction – decarbonising construction operations further.
- Emissions reductions – exploring additional innovative technologies to those developed in RIIO-2.
- Readying our network for more green gases – continued focus on biomethane, blending and hydrogen.
- Regional energy system planning – joining up approaches across the industry.

High quality service

Utilising the NIA as well as BAU innovation through our Totex allowance, we will continue to put customers at the heart of our business activities, ensuring that nobody gets left behind in the energy transition. We will explore the following areas during RIIO-3:

- Enhanced data collection – supporting cross-sector collaboration.
- Innovative new products – for example, temporary heating solutions in off-gas situations.
- Vulnerability – continuation of work to ensure fuel poverty vulnerability is better understood.
- Net zero – explore and research the financial impact of net zero on customers in vulnerable situations.
- Empowering customer-facing colleagues – supporting 'independent living' for customers.
- Collaboration – expanding our ideas and reach through working with others.

System efficiency and long-term value for money

Investing to save money is a key focus area that supports our aim of keeping customer bills low. Utilising BAU innovation through our Totex allowance, and external forms of funding, we will investigate the following:

- Digital twin – improving speed and accuracy of decision making regarding our assets.
- Artificial intelligence and machine learning (AI/ML) – automation of processes and tasks.
- Product and tooling improvements – considering environmental benefits (e.g. battery powered) as well as productivity improvements.
- Video and AI – site monitoring and notification of corrective measures, customer experience improvements utilising video.
- Safety improvements – wearable technology.
- Trenchless technologies – supporting mains replacement.

The development of these ideas and areas of focus has come through continuous engagement with various parties, and using this engagement process we will work together with many stakeholders to deliver on these ideas during RIIO-3. This includes employee ideas and participation, our supply chain, customers, partnerships and industry events or forums.

Further information on the BAU Innovation elements can be found in our Innovation strategy, Appendix 8, page 29.

Leveraging data and digitalisation

How we have developed our Digitalisation Strategy

The foundation of our Digitalisation Strategy and the definition of our digitalisation investment themes is underpinned by the data needs of our customers, colleagues and communities. Our Stakeholder Engagement Methodology and findings are included in Section 3 of Digitalisation strategy Appendix 14, page 11. We have employed both active and passive methods of collecting feedback from our stakeholders to articulate the needs of our customers, communities and stakeholders through Digital Personas and their user stories.

In preparation for the development of our RIIO-3 business plan, we have engaged our stakeholders and this supports the learning and development of our talented employees to review and update Digital Persona Profiles. We have engaged with our technology partners to shape digitalisation investments, see Appendix 11, row D1 Stakeholder engagement and decision log and Appendix 17, page 15 Workforce and resilience strategy. We have also held two global technology conferences to seek best practice and share ideas of how technology can be applied to the gas sector through data and digitalisation and innovation.

Securing data best practice

Compliance with the Data Best Practice Guidelines (DBP) guidance has been introduced as a licence obligation during RIIO-2, and adoption of the guidance has become a business-as-usual process for us. To help us identify where we need to focus our attention, we have assessed the maturity of our practices against the 11 principles of the guidance. Our most mature examples of compliance include:

- **A dedicated open data webpage and portal:** informing our stakeholders on work to date, to provide an additional channel for feedback, to present our Digitalisation Strategy and Action Plan, and to provide a data catalogue of current data assets within the open data portal;
- **Adoption of the agreed open data licence and development of a template for data sharing agreements:** to ensure that data assets are made available to selected stakeholders on the same terms and conditions;
- **Our process for conducting data triage:** developed based on the ENA data triage playbook and associated standard for data sharing processes, embedded in a Data management framework to support the engagements with Local Authorities, DESNZ and other government bodies;
- **Strong relationship with Local Authorities and developing interactions with RESP and the NESO;** demonstrating our efforts in proactive learning of the needs of our stakeholders;
- Our **data quality improvement process** for high priority issues in relation to gas asset data; with ownership through dedicated data stewardship in our operational performance function, and reporting with the use of a data quality scorecard; and
- **Establishing 'brilliant basics'** principles in Cyber Security, underpinning our cyber resilience strategy.

There are four areas of particular focus for the remainder of the RIIO-2 period:

- In October 2024 we have released a first version of our Open Data Portal. We will continue to expand functionality of the portal (exploring the features related to user feedback) and increase the number of Data Assets, focusing on information related to our gas networks and its operations in line with stakeholder needs. We also explore the options of more targeted communication to our stakeholders in relation to our roadmap and release updates.
- Maturing our data asset register and data catalogue is in progress, and we continue to build out the information, prioritising describing information from systems holding the information about our gas assets and its operations, considering the option for data model documentation to enable low effort maintenance of our standards.

› Through our Gas Data & Digitalisation Collaboration Group we plan to compare the set of data shared by all gas companies to the National Underground Asset Register platform to identify the level of interoperability in relation to our underground assets, their naming conventions and descriptions, security classification and approach to data triage, to look for opportunities to unify the approach across gas companies.

› We will continue our efforts in understanding the opportunities to support Data Sharing Infrastructure (DSI) development and the requirements for any gas data related use cases.

During RIIO-3, we will further enhance our maturity against six of the DBP principles, as summarised in Table 19.

Table 19: Evolution of our data best practice compliance maturity

DBP Compliance Maturity evolution	Status for Dec 2024	Planned Status Mar 2026	Planned Status Mar 2031
Principle 1: Identify the roles of stakeholders of Data Assets	Developing	In Control	Strategic
Principle 2: Use common terms within Data Assets, Metadata and supporting information	Developing	Developing	In Control
Principle 3: Describe data accurately using industry standard Metadata	Developing	In Control	Strategic
Principle 4: Enable potential Data Users to understand the Data Assets by providing supporting information	Developing	Developing	In Control
Principle 5: Make Data Assets discoverable to potential Data Users	Developing	In Control	In Control
Principle 6: Learn and deliver to the needs of current and prospective Data Users	Developing	Developing	In Control
Principle 7: Ensure data quality maintenance and improvement is prioritised by Data User needs	Developing	Developing	In Control
Principle 8: Ensure Data Assets are interoperable with Data Assets from other data and digital services	Limited	Developing	In Control
Principle 9: Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice	In Control	In Control	In Control
Principle 10: Store, archive and provide access to Data Assets in ways that ensures sustained benefits	Developing	Developing	In Control
Principle 11: Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open	In Control	In Control	In Control

Key **Definition of Maturity Level**

- Ineffective – No demonstrable evidence of compliance with principle
- Limited – relevant process and/or artefacts exist and requires significant further development or currently executed outside of BAU processes
- Developing – relevant process and/or artefacts exist and are part of BAU process in selected areas
- In Control – relevant process and/or artefacts exist and operate as part of BAU process
- Strategic – relevant process and/or artefacts exist and operate as part of BAU process

Taking the DBP guidelines into consideration along with the feedback from customers, communities and stakeholders, we have identified actions and investments that we plan to make in RIIO-3. Our RIIO-3 investments have been grouped under three themes as shown in Figure 28 below.

Figure 28: We have established three themes in our approach to digitalisation

Interoperability

Breaking down the silos

Interoperability is key to increase safety, security resilience and efficiency of the energy system. There is value in breaking down the existing silos within and between organisations and harnessing the emerging interactions of different digital assets.

Suitable digital standards, tools and platforms are required to realise the vision of an efficient distributed energy system.

Data & Digital Literacy

Setting up our people for success

Delivery of a digital energy system requires digitalisation culture to be embedded within organisations.

Data and Digital competencies, predominantly required within Information Technology and Data functions, need to grow in all areas of the organisation to enable effective management of a digital system.

Open Data

Enabling data driven decision making

Access to good quality data is a fundamental requirement of digital innovation, both internally within the organisation and across the sector.

The energy data needs to be available through appropriate solutions and services tailored to different needs of Energy Data Users.

We have grouped our proposed investments (including BAU efforts) alongside each of our digital themes in Table 20 below):

Table 20: Planned investment under each digital theme

Digital theme	Investment	Outcome	Data best practice principle alignment	RIIO-3 totex
Interoperability	Common Information Model for Gas (INV-38)	Development of a Common Information Model for Gas Data to increase interoperability of gas data in digital solutions.	**Principle 2:** Use common terms within Data Assets, Metadata and supporting information. **Principle 8:** Ensure Data Assets are interoperable with Data Assets from other data and digital services.	£0.4m
	Data Sharing Infrastructure (INV-37)	Data Preparation Node configuration for Data Sharing Infrastructure.	**Principle 9:** Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice. **Principle 8:** Ensure Data Assets are interoperable with Data Assets from other data and digital services.	£1.2m
	Expanding Target Data Architecture (INV-25)	Introduction of new capabilities in area of: 3D visualisation of assets, scenario modelling and OT analytics.	**Principle 6:** Learn and deliver to the needs of current and prospective Data Users. **Principle 10:** Store, archive and provide access to Data Assets in ways that ensure sustained benefits.	£7.1m

Table 20: Planned investment under each digital theme

Digital theme	Investment	Outcome	Data best practice principle alignment	RIIO-3 totex
Data and digital literacy	Increasing Digital Literacy of our staff	Creation of reference material and training to mature confidence of our staff in executing Data Triage assessment and understanding digital risks.	**Principle 9:** Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.	£0.0[10]
	Data Best Practice principles in Supply Chain	Introduce mechanisms to drive Data Best Practice compliance in Supply Chain.	**Principle 11:** Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.	£0.0[10]
	Evolution of Open Data Portal and its offering	Establish our Open Data Portal as the core data sharing platform with our Stakeholders.	**Principle 6:** Learn and deliver to the needs of current and prospective Data Users. **Principle 11:** Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.	£0.0[10]
	Expanding Data Users community	Bringing new talent to support development, utilisation and adoption of digital solutions and Data Assets across Energy data community.	**Principle 6:** Learn and deliver to the needs of current and prospective Data Users.	£2.25m[10]
Open data	Modernisation of RRP (INV-23)	Develop digital processes and digital Assets to replace manual Regulatory Reporting processes.	**Principle 11:** Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.	£4.6m
	Unified Asset Investment Portfolio Management (INV-03)	Development of digital solutions in response to the needs in areas of Asset Investment, Future Energy and Climate Resilience.	**Principle 6:** Learn and deliver to the needs of current and prospective Data Users. **Principle 8:** Ensure Data Assets are interoperable with Data Assets from other data and digital services. **Principal 10:** Store, archive and provide access to Data Assets in ways that ensure sustained benefits. **Principle 11:** Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.	£12.5m
	Digital Platform for Leakage Analytics (DPLA) Roll-out	Define optimal blend of Advanced Machine Learning (ML) models and Advanced Leak Detection (ALD) technologies, visualised through an interactive user interface in support of carbon emission management.	**Principle 6:** Learn and deliver to the needs of current and prospective Data Users. **Principle 8:** Ensure Data Assets are interoperable with Data Assets from other data and digital services. **Principle 11:** Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.	£5.1m

10. BAU investment.

How this is making a difference in the plan

Our plan leverages our data and digitalisation roadmap to underpin the key outcome areas. Some of the key highlights are:

- We have developed digital models to support Intelligent asset management and proactive leak detection and analysis (leading to smart network interventions and smart operations) (See case study 4, page 45).
- We are facilitating whole system planning through creating digital twin models to show where our pipelines are and to help regional and national planning on capacity, heat demand, new biomethane resources and hydrogen planning models). See case studies 6 and 7 on page 49.
- We are enhancing transparency of data through customer service applications, improved Priority Services Register data, a live view of our streetworks through 'One Network', and developments to support regulatory reporting particularly focusing on transparent NARMs data and sustainability data reports).

Presenting data insights from the Future Energy Explorer

Summary of commitments

In line with the previous outcome areas, we have summarised below the output commitments relevant to System Efficiency and long-term value for money in the table below.

Table 21: Our output commitments for system efficiency and long-term value for money

Measurement of success											
						Networks					
Ref.	Output	Common/ Bespoke	Output type	Annual/Period target	Measure/Unit	Eastern	North London	North West	West Midlands	**Cadent**	Comparison to RIIO-2
D1 Digitalisation											
D1.1	**Digitalisation Strategy & Action Plan (DSAP)**	Common	LO	Period	In place and published	✓	✓	✓	✓	✓	Same requirement
D1.2	**Data Best practice guidelines**	Common	LO	Period	Compliance	✓	✓	✓	✓	✓	Same requirement
D1.3	**Modernisation of Field Service Management ◆**	Bespoke	PCD	Period	Solution replacement	✓	✓	✓	✓	✓	New for RIIO-3
D1.4	**Energy Control Centre Applications Rationalisation ◆**	Bespoke	PCD	Period	Project delivery	✓	✓	✓	✓	✓	New for RIIO-3
D1.5	**Network Infrastructure for Supervisory Control and Data Acquisition (SCADA) Operational Technology ◆**	Bespoke	PCD	Period	Project delivery	✓	✓	✓	✓	✓	New for RIIO-3
D2 Innovation											
D2.1	**Network Innovation Allowance**	Common	UIOLI	Period	Forecast spend (£m)	7.9	5.3	4.4	3.9	21.5	40.4

Managing uncertainty and protecting against non-delivery

Uncertainty Mechanisms proposed

Table 22 shows a summary of the 13 common uncertainty mechanisms that Ofgem has specified in the SSMD that are relevant to the System efficiency and long-term value for money outcome area.

We have proposed two new common uncertainty mechanisms for this outcome area relating to the uncertainty of the timing and scale of the new Code Manager implementation and to reflect the Government's proposed change to employer's contribution to National Insurance which we have not been able to factor into our plans.

Table 22: Uncertainty mechanisms proposed for system efficiency and long-term value for money

Reference	Area of uncertainty	Proposed mechanism for RIIO-3	Common/Bespoke	Where discussed in our plan
UM.D.1	Digitalisation	Re-opener	Common	N/A (We agree with SSMD scope)
UM.D.2	Pension Scheme Established Deficit	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.3	Bad Debt	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.4	Ofgem licence fee costs	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.5	Business rates (prescribed rates)	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.6	Cost of Debt	Indexation	Common	N/A (We agree with SSMD scope)
UM.D.7	Real Price Effects	Indexation	Common	N/A (We agree with SSMD scope)
UM.D.8	Cost of Equity	Indexation	Common	N/A (We agree with SSMD scope)
UM.D.9	Inflation Indexation of RAV and Allowed Return	Indexation	Common	N/A (We agree with SSMD scope)
UM.D.10	Miscellaneous	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.11	Gas Transporters share of Xoserve costs	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.12	Theft of gas (supplier responsible)	Pass-through	Common	N/A (We agree with SSMD scope)
UM.D.13	Tax Review	Re-opener	Common	N/A (We agree with SSMD scope)
UM.D.14	Code Manager Implementation	Pass-through	New Common	BPDT M8.14 Commentary section 2.4.2
UM.D.15	National Insurance Employer Contributions	Pass-through	New Common	BPDT M8.14 Commentary section 2.4.3

How we propose to finance the plan

We set out what we need in order to be an investable business for RIIO-3 so we can raise and retain the debt and equity finance needed to invest in and maintain our safe and resilient network infrastructure.

This requires a regulatory framework that fairly balances the level of risk and return available to investors, whilst ensuring current and future customers only pay for an efficient level of expenditure.

In this section

Key proposals

- Higher interest rates and evolving risks need to be appropriately funded. A minimum return to equity of 6.3% (CPIH real); reflecting a Beta estimate that draws on evidence provided from European gas networks.
- A dividend yield of 6%, maintaining gearing at 60% of the Regulated Asset Value through an appropriate return of capital previously invested.
- Debt funding aligned to a 10-year trailing average of the iBoxx utilities index with a 0.4% uplift.
- Ensuring inflation protection through 30% of the notional debt book being hedged to inflation.
- Natural capitalisation rates to maintain intergenerational balance for charges.
- Given the uncertainty over the speed at which gas usage may change and the essential role that the gas networks will play for decades to come in any net zero pathway, we do not believe any further acceleration of depreciation is required for RIIO-3.
- We believe that we are financeable subject to a balanced final determination and reassessment of credit rating analysis following further guidance from rating agencies as they consider the new reality of RIIO-3.

Primary references to other parts of the plan

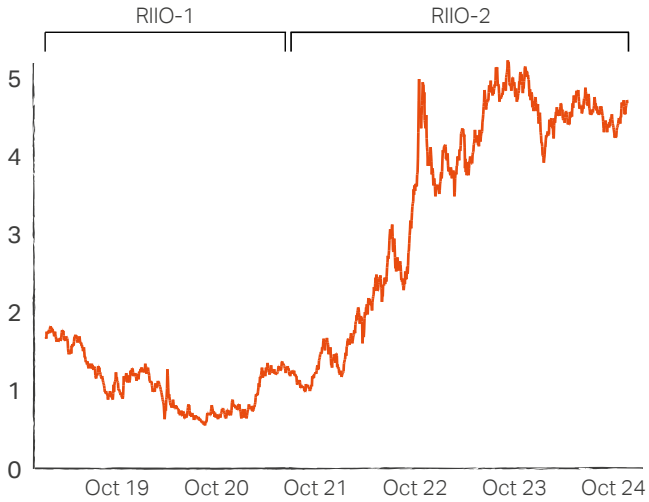
Appendix 7: Finance

Overview

Since we completed our RIIO-2 plan, there has been a shift in the financing environment we operate in. We have moved from low interest rates to higher rates and we see lower investor confidence for investing in UK utilities, particularly gas distribution networks.

The chart in Figure 29 below demonstrates this stark increase in interest rates.

Figure 29: The yield of 10-year UK government gilts has risen significantly over RIIO-2



Investability

We will be financing our plan in a period where the competition for capital will be intense from investment in other infrastructure such as water sewerage and power networks. Our plan indicates a requirement to refinance over £3 billion of debt and reinvest equity capital.

Whilst the exact pathway to net zero may be uncertain, it will take a long period of time during which we must efficiently fund investment so we can continue to provide a low cost, safe and resilient network.

We welcome the introduction of investability into the RIIO-3 framework. By 'investable' we mean that the RIIO-3 framework needs to support a pool of debt and equity investors who, at any given point in time, knowing the alternative investment opportunities that are available to them, would actively choose to invest in the gas distribution networks.

Investability requires attention to the following:

- An appropriate return on equity including **an equity beta based on a sample of companies that reflect gas specific forward looking risks**, given the evolving risk landscape. We provide details of listed European gas sector beta data that should be included as part of the notional company assessment.
- Ofgem should ensure that the available returns **reflect the macro-economic environment prevalent at the time of the price control**, showing flexibility to amend assumptions on Risk Free Rate and Market Returns so the overall returns cross check appropriately to industry analysis.
- We welcome Ofgem noting that **it is not in customers' interests for investors to face the risk of stranded assets**. We believe more time and policy development is needed across Government and Ofgem to ensure a fair and equitable transition to net zero.
- The funding for debt costs must index accurately to the quantum, tenor and interest rates that are achievable. The funding for new debt should consider the **diverging costs between sectors** and the benchmark indices used.
- Ofgem should consider not just a fair return on capital but also how the **return of capital** is reflected in the allowed dividend yield.
- An **overall price control financial package that is a fair bet to investors** – consistent tightening of price controls has led to investor caution over the ability to generate the allowed return and reduces the pool of potential investors into the sector. As expected for RIIO-2, the allowed totex was below required levels set out in business plans and this has led to a Return on Regulated Equity ('RoRE') below the baseline allowed. Over time this will prevent new capital becoming attracted to the sector.

The required return on equity

The return that we are able to offer to investors is not the only factor that will determine whether we are attractive to equity providers. But it is a key factor that investors will look at. Along with the other gas and energy networks, we have commissioned expert reports on a range of technical topics that would help us identify what a reasonable return looks like in today's financial market conditions, reflecting the risks that investors see in gas distribution networks compared to other sectors of the economy. Our assessment, after reviewing this evidence, is that the required return on equity for the RIIO-3 period is currently no lower than 6.3% (in real terms, after accounting for CPIH inflation).

This is higher than the current RIIO-2 return in part because there has been a shift in the last 2-3 years from historically low interest rates to a higher-for-longer interest rate outlook (which is still evolving as we write this plan); and the increasing awareness of investors about the potential risks of investing in a gas distribution network.

Where previously gas networks might have been seen as conventional network utility businesses, offering predictable cashflows and a high degree of certainty around the return of and on investor capital, anyone investing today in a gas network will be aware that a consensus is yet to be forged around the long-term role of different energy types, and hence the long-term role of our business in the country's energy mix.

This unavoidably makes gas networks riskier than was the case just a few years ago and also more risky than electricity and water companies that have enduring natural monopolies.

We have seen this sentiment impact the cost of raising debt relative to utility peers. Fitch note in a recent publication that they are seeing higher rates for gas networks, compared to electricity, and this evidence equally applies to the required return on equity.

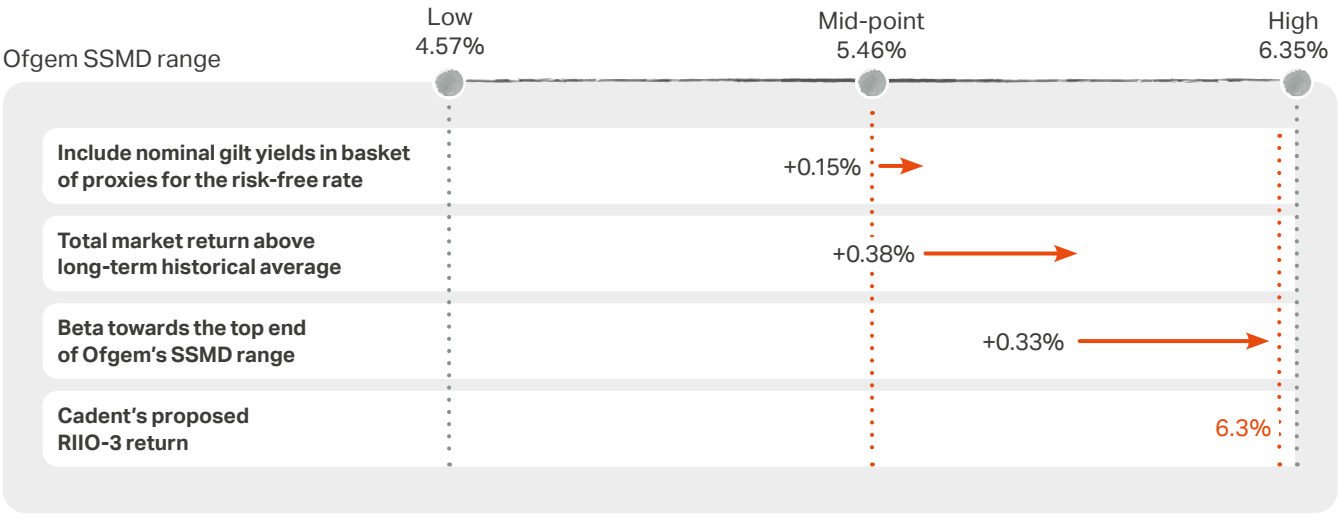
We provide full details of how we have calibrated each individual item in our Appendix 7 Finance and Table 23 shows how our central estimate of 6.3% compares to the Ofgem range. We view the benefits of being cautious when setting the allowed return as outweighing the risk of setting the return level too low.

Table 23: Our cost of equity shows a narrower and higher range than Ofgem's SSMD range (CPIH real)

	Ofgem SSMD low	Ofgem SSMD high	Cadent low	Cadent high	Cadent mid
Gearing	60%	60%	60%	60%	
Risk-free rate	1.18%	1.18%	1.82%	1.82%	
TMR	6.5%	7.0%	7.0%	7.5%	
Asset beta	0.30	0.40	0.35	0.40	
Debt beta	0.075	0.075	0.075	0.075	
Equity beta	0.64	0.89	0.76	0.89	
Cost of equity	**4.57%**	**6.35%**	**5.8%**	**6.9%**	**6.3%**

The chart below summarises where our views differ from the mid-point of Ofgem's range provided:

Figure 30: Our view is that the required return on equity should be no lower than 6.3% (CPIH real)



Ofgem consider that cross checks are a useful tool to test the allowed returns. Our analysis of cross checks points to a rate of return no lower than the upper end of the SSMD range, consistent with our views.

Our final assessment in part depends on the risk and returns within the overall package at Final Determinations and how interest rates move over the coming months. As such our view is the return should be no lower than 6.3% (CPIH, real) but could be higher based on the trend in interest rates which is still evolving at the time of writing this plan.

An appropriate dividend yield

Our dividend policy is summarised in Appendix 7, page 19. The current Ofgem working assumption is a low dividend yield; at 3% for the notional company. If this yield was paid, it would result in deferring benefit to shareholders into the longer term which adds risk to equity. In addition to a wide range of financial literature and empirical evidence that shows that dividend policy matters to investors, utilities are generally considered as income or dividend-paying stocks. There are several regulatory and actual company precedents that demonstrate that dividend yield should be higher than 3%. This is supported by a report from Oxera which demonstrates **a 6% dividend yield is consistent with European listed comparators and market expectations.**

We do not see the requirement for significant new equity in the RIIO-3 period with reinvestment of capital required to sustain the RAV position projected. As such, we are unlikely to require an equity issuance allowance.

The required return on debt

Our plan

We remain supportive of the use of a notional company funding model. Ofgem determines the cost of debt using a trailing average of the iBoxx utilities index. Initial analysis points to the need for the tenor of the trailing average to shorten to 10 years in light of the evolving sector costs and tenor of debt that is deliverable efficiently. Additional borrowing costs are also required to be funded and our analysis points to the need to uplift the sector costs by 0.4%.

We agree that indexation of the allowed cost of debt in line with market interest rates is appropriate and remain supportive of Ofgem's approach of setting the cost of debt based on sector-level expectations for a notional company.

Our analysis suggests that Ofgem's working assumption for the allowed cost of debt is not going to match the sector average interest costs.

Appendix 7, page 21 details our view that:

- Investors have diverging views across sectors and are pricing the risk of gas sector assets higher than the electricity sector;
- The iBoxx Utilities 10+ index does not fully reflect sector costs – we expect a premium of 40bps will be needed on top of this index akin to Ofgem's approach for RIIO-ED2;
- The tenor of the trailing average needs to be calibrated to expected tenors that can be delivered efficiently in the market. Based on investor surveys and our own experience, a 10-year tenor is deliverable.
- **Establishing the additional costs of borrowing:** when we raise debt, significant additional costs are incurred, for example, from having the debt rated by credit ratings agencies. These costs are accounted for through an uplift to the external index used. Ofgem has provisionally assessed these costs as 0.25%, in line with RIIO-2. A reduction to the average tenor of debt, alongside updated analysis of actual costs in the sector, indicates that this should be at least 0.4% in RIIO-3.

Funding Fixed Rate debt in the notional company

We welcome Ofgem's move to a semi-nominal WACC to address what it sees as a risk of winners and losers where actual inflation outturns above or below the long run average. This change is acceptable on the basis that the notional company maintains some index-linked debt within its portfolio to manage inflation risks and financeability. We are aligned with the requirement that c.30% of the debt book should be inflation-linked for an efficient network; however, we believe this can be more efficiently delivered through the inclusion of derivatives which are not currently funded through the regulations.

Intergenerational fairness and longer-term resilience

Our views on the RAV depreciation policy

We believe that our network will be required beyond 2050 and therefore significant acceleration of Regulatory Asset Value (RAV) depreciation is not required and may cause current customers to pay more than required. If Ofgem proceed with accelerated depreciation, however, our view is that Ofgem should apply its 'Option 4' (accelerate depreciation on new assets only) as it results in the lowest customer bill impact and retains a RAV balance beyond 2050 in line with our expectation of network usage.

Ofgem has opened the discussion as to whether the existing depreciation policy remains relevant considering stylised modelling that shows RAV balances, as currently projected, will remain high in 2050, at which point the UK government is committed to net zero greenhouse gases. We welcome Ofgem focusing on this matter and note that it is not in customers' interests for investors to face the risk that assets are stranded as a result of the transition to net zero. Our view is that, regardless of the policy option chosen, without a clear and unambiguous commitment from Ofgem and the Government on RAV and revenue recovery, there will be an investor perception that the allowed revenues that we are entitled to recover may be at risk. This cannot be fully mitigated through accelerated depreciation.

In any scenario we believe the network will be required for decades to come to support decarbonisation of the UK.

As such, we believe it would be hasty to apply a significantly more aggressive RAV depreciation policy given the impact on consumers today (with higher bills) that may be regretted should the pathway to net zero deviate from the current target.

Accelerating the RAV recovery has the potential to give negative signals to investors and longer-term financial resilience/investability and impact costs. As shown by Ofgem's own analysis, under any of the pathways should there be a steep reduction in customer numbers there would be a material and unsustainable increase in customer bills. The conclusion this leads to is depreciation policy alone could lead to a challenge in delivering a fair and equitable migration to a lower carbon economy. A wider public policy debate is needed relative to funding the transition to net zero.

We do not believe any further acceleration of depreciation is therefore required for RIIO-3. As requested by Ofgem, we have assessed our financeability on Ofgem's designated depreciation baseline 'Option 2' which seeks to deliver a zero Regulatory Asset Value by 2050. We believe, however, that should Ofgem want to pursue acceleration, then they should apply their 'Option 4'. This accelerates depreciation on new assets only, for a period commensurate with delivering net zero in 2050.

Appendix 7, page 38 details the potential impact to customers in terms of network charge increases.

Capitalisation policy

For capitalisation rates, we propose a similar methodology to RIIO-2 where capital costs are funded via the RAV and spread over time, and operating costs are funded by current customers.

Financeability

Financial resilience is the cornerstone of our plan

Financial resilience addresses the extent to which an organisation's financial arrangements enable it to avoid, cope with and recover from disruption. This is managed through the headroom available on credit rating and key metrics to withstand plausible downside shocks. In order to deliver sustainable outcomes to customers and the environment, we need to be able to maintain sufficient financial headroom and flexibility to preserve liquidity and investment-grade ratings in the face of plausible downside financial shocks.

Our Board and management team apply tight focus and control on ensuring resilience to operational and financial risks, as well as the wider business risks.

Ofgem is equally focused on financial resilience and has increased requirements through Regulatory Financial Performance Reporting, and is considering changes for RIIO-3 to include minimum credit ratings and maximum gearing levels, for example.

We recognise the need to closely monitor the situation and we continue to work collaboratively to ensure that network resilience is appropriate relative to the risks presented.

Our credit ratings, provided by all three major rating agencies, are noted below:

Our Board's philosophy is to uphold the highest standards of corporate governance appropriate to Cadent's size and the essential public service it provides, including oversight of our Enterprise Risk Management process. We recognise that doing so is fundamental to our ability to deliver against our purpose, values and commitments. Further details are provided in our Annual Report and Accounts.

Our assessment of financeability

The notional company is financeable based on Ofgem's working assumptions of a return to equity of 5.4%, based on current market conditions and under existing rating agency methodologies. A reassessment may be required if our understanding of rating agency methodologies changes. Long-term investability relies on developments on the public policy debate around a fair transition to net zero, that ultimately requires a firm commitment to recovery of the RAV through clear and unambiguous government commitments.

Our plan is written at a point where gas specific risks are rising, impacting expected debt issuance tenor and cost. ESG related risks are also evolving which could increase rating migration risks.

Given the large quantum of financing required in RIIO-3 and the higher interest costs this will result in, our assessment is heavily reliant on appropriate calibration at the Final Determination.

Notional company financeability assessment

We agree with the approach of assessing financeability relative to the notional company, while placing the responsibility on companies to demonstrate financeability based on the actual capital structure. We note that Ofgem has a duty to ensure the financeability of networks to both debt and equity investors.

In determining key regulatory parameters, including cost of capital allowances, it is critical that Ofgem allows for the notional company to be financeable, at least at a solid investment-grade rating, and provides for the required expected level of equity returns.

Our current investors, at significant cost, refinanced the debt book as part of the segmentation from National Grid in 2016/17. This resulted in sector leading financial resilience and a lower cost of debt than the overall sector. By focusing on notional company analysis, company specific differences such as these must be accounted for (where appropriate) and we welcome that Ofgem has confirmed in the SSMD that it remains appropriate to adjust for the costs incurred as part of the calibration process.

Rating agency views on financeability levers

Rating agencies will likely 'see through' or disregard the benefit of any financeability enhancements (e.g. changes to capitalisation rates, depreciation periods or acceleration of debt funding costs) which negates the benefit of such measures to debt metrics.

Fitch in its note on the 'Importance of Post-Maintenance Interest Coverage Ratios 'PMICRs' for Credit Analysis of UK Regulated Networks' in January 2019 observed that 'PMICRs' should not be affected by regulatory financeability adjustments. Fitch in its recent note on RIIO-3 explained that it will potentially need to change its metrics to reflect the 'new reality' of the RIIO-3 framework decisions. A similar view has been expressed by Moody's in its Rating Methodology where it notes that a regulator has significant ability to alter the timing of a network's cost recovery by changing specific parts of the regulatory formula.

The Adjusted Interest Cover Ratio attempts to normalise for these 'regulatory levers' by adjusting Funds From Operations (FFO) by an amount of money that can be influenced by regulatory decision-making in the allowed revenue calculation.

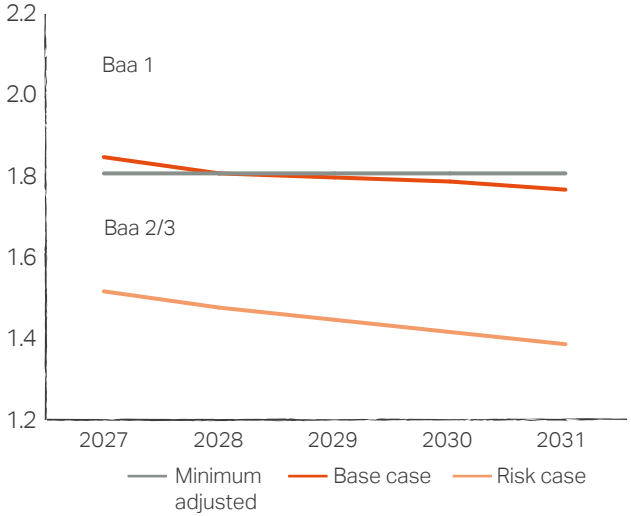
Assessment relative to debt investors

At the time of completing this plan, the rating agencies have not had sufficient information to decide if they need to, or the extent to which they need to, recalibrate targets to take into account the new reality of RIIO-3. As such, for our assessment of financeability to debt investors, we have recalibrated thresholds based on the differential in revenues that the methodology changes apply. This is a stylised approach and further assessment will be required as new information becomes available. We have complied with Ofgem's working assumptions as detailed in the business plan guidance including the use of a return to equity of 5.4% (CPIH, real).

We focus our output on the Adjusted Interest Cover Ratio (AICR) metric as defined by Moody's. The existing guidance for Baa1 is a minimum coverage ratio of 1.4x. Our analysis shows that this would increase by c.0.4x in RIIO-3 to 1.8x based on the revenue acceleration proposed in the notional base case assessment. Under the base case we maintain limited headroom to the Baa1 threshold, and under a reasonable downside stress tests (assuming RoRE underperformance) the target threshold is not met.

Our actual company is more resilient given the low cost of debt noted above.

Figure 31: The Adjusted Interest Cover Ratio (AICR) metric could be heavily impacted in our downside case



Source: Business Plan financial model

Subject to a fair and balanced Final Determination by Ofgem (on returns, totex, outputs and incentives) and depending on rating agency reassessment of target metrics, we conclude that, overall, our plan is financeable to debt investors. We will be able to raise the new debt our plan requires; however, given the uncertainties noted, further work is required following Ofgem's Draft Determination. Our confidence in the financeability of our actual structure is driven by the mitigations already put in place by our shareholders, to achieve a competitive cost of debt delivering a solid investment grade credit rating.

Assessment relative to equity investors

The financeability assessment cannot be solely focused on debt metrics. Sufficient coverage implied by financial ratios for debt cannot on its own be assumed to imply that returns on equity will be adequate. We agree with Ofgem's view that 'financeability should refer to the licence holder being able to finance activities that are the subject of obligations imposed under relevant legislation and hence is applicable to both equity and debt'.

We note above that the final calibration of the CAPM implied required return to equity will be key to assessing the investability of RIIO-3 along with the outcome of the RIIO-3 process delivering a fair bet to investors that the allowed return can be achieved. In addition to the equity return, we note above the importance of the dividend yield assumption being correctly calibrated.

Mitigations to financeability constraints

As part of our financeability assessment, we consider the mitigations that can be applied to improve our financial resilience including restricting dividends, injecting new equity, refinancing debt, adjusting capitalisation and depreciation rates, and gearing.

Longer-term considerations

A key part of the financeability assessment relates to longer-term analysis, in particular with regards to investability. Our plan has been prepared in the context of a longer term environment which contains material uncertainties, some of which may have fundamental impacts on the attractiveness of the sector for investors. As noted in Ofgem's SSMD, there is potential for significant bill increases, potentially to an unsustainable level without intervention. If investors perceive risks around RAV recovery in such a scenario, absent additional mechanisms beyond accelerated depreciation, this could further undermine investability.

Assurance on the financeability of our plan

The Board has provided assurance that the plan is financeable on a notional and actual company basis. This has been supported by analysis completed by KPMG.

KPMG note in their report that whilst we are financeable under Ofgem's modelling scenarios the financeability assessment should include:

- Consideration of both RIIO-3 and the longer-term, given uncertainty around demand and ongoing investability.
- Whilst credit metrics in RIIO-3 may appear robust, those metric thresholds may be adjusted or moved to fully nominal metrics impacting the validity of any conclusions drawn.
- Financeability cannot be assessed without considering investability – it will be critical that the allowed cost of capital is sufficient, such that we are able to retain and attract equity in the context of significant competition from other adjacent sectors.
- Looking beyond RIIO-3, Ofgem's proposals in respect of accelerated depreciation assume declining domestic customer numbers. This may create challenges around longer-term financeability and investability, driven by very high implied customer bills and a growing mismatch between the risks faced by the business and the allowed return.

What this means for the customer bill and UK economic growth

We set out the contribution our network costs have to an average domestic customer's bill. We then set out how our proposed plan would impact the bill together with the impact of some of the financing choices Ofgem is consulting on for RIIO-3. We then show how our plan will contribute to UK economic growth using Ofgem's defined criteria for economic growth from their statutory growth duties.

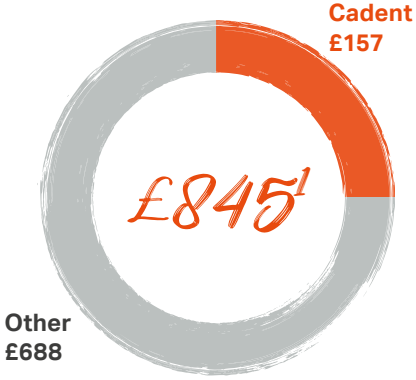
In this section

Impact on bills

Cadent cost shown is average for RIIO-2

Other costs include:

- Wholesale costs
- Transmission network costs
- Other direct costs such as metering
- Supplier operating costs



1. Average domestic customer gas bill as per January 2025 energy price cap.

Impact on growth

In support of Ofgem's statutory growth duty, there are six of their seven economic growth levers (EGL) on which our plan will have a direct influence both nationally and across the regions we operate within.

EGL1. I Innovation

EGL2. Infrastructure and investment

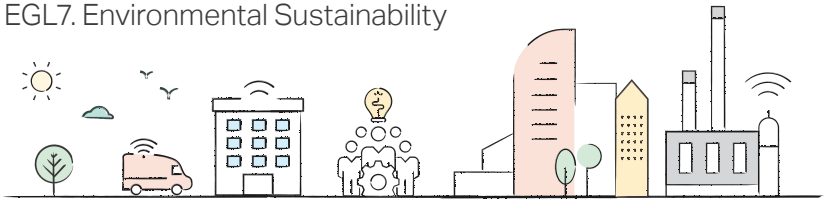
EGL3. Competition

EGL4. Skills

EGL5. Efficiency and Productivity

EGL6. Trade – supports but indirectly, so not included

EGL7. Environmental Sustainability

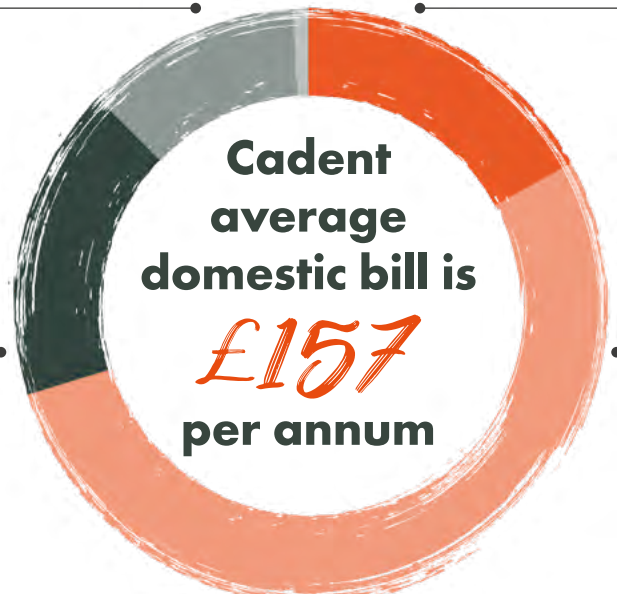


The impact on an average domestic customer bill

Our expected customer bill breakdown for the last year of RIIO-2 shows an annual contribution to an average domestic consumer bill of £157 in 2023/24 prices. The predominant element is recovery of past and present network investment which together with operating and maintaining the network and our emergency response and repair activity combine to maintain a safe, secure and resilient service (£129 combined).

The other elements are non-controllable costs such as taxes and business rates and a very small element related to performance incentives (showing the very constrained nature of the RIIO-2 output incentive regime).

Figure 32: Our contribution to the average domestic customer bill is £157 per annum



Performance improvement incentives

£1

Optimising our performance and putting the customer at the heart of everything we do.

Operating & maintaining the network

£22

Operating and maintaining the equipment and infrastructure to transport gas safely and reliably today.

Taxes, licence & other fees

£25

Taxes, licence fees for industry regulations and business rates paid to local government.

Providing a 24-hour emergency & repair service

£28

Taking calls, attending and repairing gas emergencies and escapes and making it safe.

Network investment

£81

Paying for the cost of both past (£72) and present (£9) investment in the network. Replacing old pipes and other equipment to ensure the safe and reliable flow of gas to homes and businesses.

What our plan would mean for customer bills and affordability

In providing this plan we are very conscious of the need to keep our proportion of customers' gas bills as low as possible. We have therefore kept the proposals in our plan to the essential services we believe are required to meet our legislative requirements, and ones that provide value to current and future customers and wider society.

Figure 33 shows how our proposals would increase domestic bills by £15 per annum (9%) from £157 at the end of RIIO-2 to **£172 on average** in RIIO-3, driven by increases in:

a) anticipated expenditure (the c.£1bn totex increase) in Figure 24 on page 70 and associated costs such as tax and;

b) investor returns to debt and equity to ensure our plan is financeable, reflecting macroeconomic changes.

We also show how Ofgem's proposals relating to changes in its assumptions on how debt financing is dealt with, and different options for accelerating depreciation, affect charges to customers. These changes could increase bills significantly beyond £172 up to £214 (a 36% increase).

The figures all assume a constant number of customers at the current c.11 million customer supply points. The increases would be larger if these customer numbers were to fall. A 10% reduction in customer numbers would see an increase in charges of a further £26 per typical domestic customer.

These increases would also impact the bills for industrial and commercial customers.

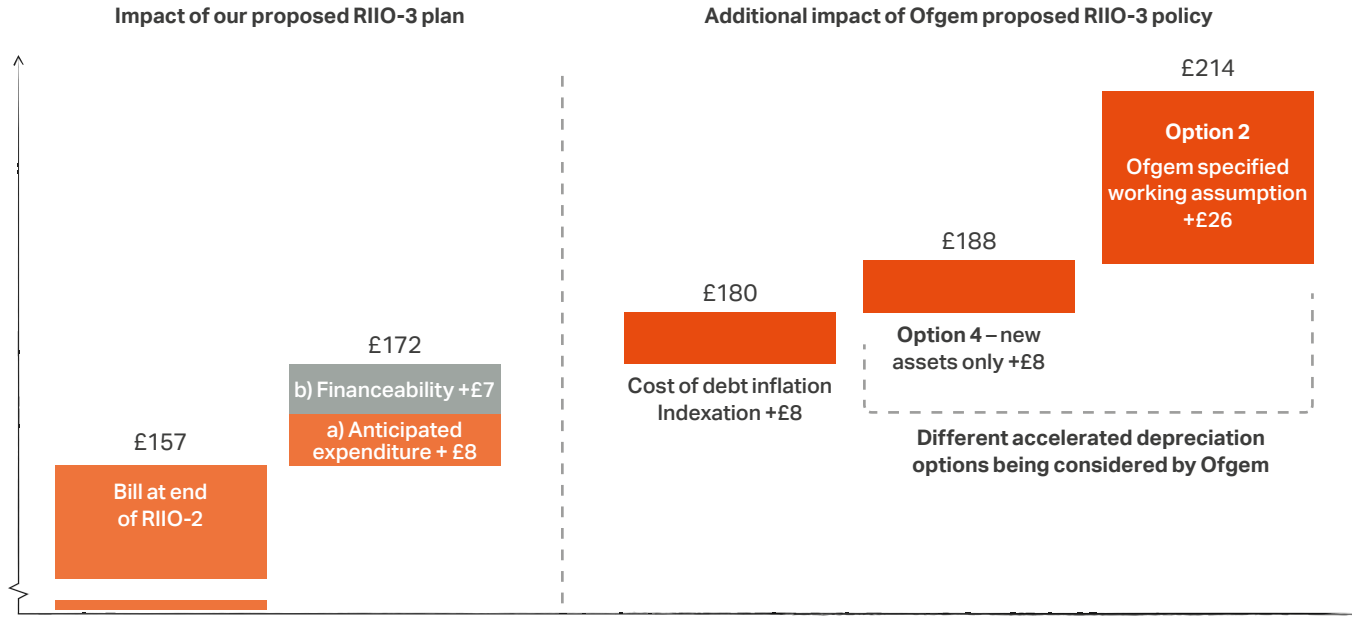
Hence the considerations of whether to accelerate depreciation further will have a short-term impact on small business and larger manufacturing users as well as domestic customers.

We do not believe Ofgem should accelerate depreciation any further for RIIO-3, given the continued uncertainty over the direction, practicality and speed of future energy pathways.

Most customers see our plan as representing value for money

71% of our customers confirmed support for the proposals made in our plan as providing value for money through acceptability testing, despite rising bills and ongoing cost of living challenges faced by many. This compares with 82% for our RIIO-2 plan, in which bills were falling significantly and the economy was far more buoyant.

Figure 33: We have sought to ensure charges in RIIO-3 are affordable and our plan would cost the average customer £172 per annum



How our business plan will deliver economic growth

Infrastructure and investment (EGL2)[11] and competition (EGL3)

- We are supporting UK products and manufacturing that could not continue without the high temperatures that only gas can economically provide. Examples include steel, glass and ceramic production.
- We are maintaining and developing new partnerships with the UK charity sector to augment their reach and impact, for example with regional Citizens Advice operations, National Energy Action and health charity organisations. See our Vulnerability strategy (Appendix 16, page 3).
- Our plans aim to facilitate competition and stimulate a rapid expansion of the UK indigenous biomethane market and supply chain as well as hydrogen blending production markets which will play a key role in energy security and developing indigenous production sources. (See case study 6, page 49).
- We are continuing to facilitate the connection of indigenous renewable generation by providing security and dispatchable power generation to 188 plants with a combined capacity of 2.3 GW currently connected to our high pressure and medium pressure networks. See the Foundations chapter, Future role of gas section on pages 15-18.
- In parallel to the RIIO-3 plans, we continue to stimulate the UK hydrogen economy by developing industrial clusters to support the decarbonisation of industry such that it can remain in the UK. This will generate new jobs in our regions through new hydrogen pipelines and looking at preparing for repurposing pipes.

Skills (EGL4)

- Continued investment in the network will support a key UK skill base.
- Cadent is responsible for employing c.7,000 staff and supports a supply chain that provides employment to over 5,000 people.
- We will maintain >4,000 jobs in the supply chain for our Tier 1 iron mains replacement programme.
- Through our award-winning engineering and graduate apprenticeship schemes we are creating economic opportunities for young talent and those who might not get opportunities elsewhere. This is combined with school outreach programmes. See Workforce and supply chain resilience strategy, Appendix 17, page 8.
- Our focus and ambitions on Equity, Diversity & Inclusion are making a real change in the recruitment and welfare of our employees, supply chain and partners. We have driven particular progress in encouraging greater female representation at senior levels, and a greater representation of ethnic minorities. However, we recognise that this is still a journey, and our plans seek to go further See Case study 2, page 36.
- We would create additional jobs through the proposed advanced leakage intervention programme and stimulate the development of a larger diameter mains supply chain for future work. See Section A2.2 of the Safe, secure and resilient chapter.
- We are also working with partners to create new skills to prepare for developments in the hydrogen market.

11. EGL – Relevant economic growth levers in Ofgem's growth duty under the Statutory Guidance Section 110 (1) of the Deregulation Act.

Efficiency and productivity (EGL5)

- We have maintained an ambitious target to drive ongoing efficiency with c.£200m savings committed to over RIIO-3. (See System efficiency chapter).
- We listen to our customers and stakeholders to assess the efficiency of the investments we are making to drive maximum social return per pound spent. We also assess how we can make the biggest impact on third sector productivity by enabling our partners to augment their own resources. For the investment set out in the base expenditure and the Vulnerability and Carbon Monoxide Awareness allowances (VCMA) our plan would generate material social return (for example, a potential of £25 of Social Return on investment for every £1 spent on supporting customers in vulnerable situations (this is the measure Ofgem prescribes in reporting the activity). (See High quality service chapter).
- We are specifically targeting support to customers in fuel poverty and through our plans save >£2,000 per customer reached. (See High quality service chapter C4).
- Our digital innovations to support leakage detection and analysis all drive more efficient and productive interventions and longer-term efficiency of reducing unplanned interruptions of service. (See Infrastructure chapter).
- Our streetworks collaboration plans drive cross sector efficiency and productivity to reduce disruption and traffic congestion. (See to High Quality service chapter).

Environmental sustainability (EGL7 and EGL1)

Our technology-led advanced leakage management approach in this plan is driven by the desire to make a step change impact in protecting the planet and creating a blueprint for the sector to follow (50% greater reduction than previously). We are bringing innovations from across the globe to deploy and stimulate the UK market such as vehicle mounted sensors. (See case study 4, page 45).

Our thought leadership and continued research and analysis around the future role of the gas network is driven by the desire to ensure we get the best value for UK plc from the investment made in the high-performing distribution networks. Our plans to deliver a polyethylene network will enable the option to repurpose the networks and maximise the value customers have invested in to date. Continuing to use existing infrastructure will also avoid unnecessary additional alternative infrastructure needing to be built, thus avoiding further cost and disruption to customers through the transition to net zero. (See Foundations chapter, 1 Future role of the gas network).

- We will reduce harm to the environment by lowering our business carbon footprint by a further 13% in RIIO-3, through continuing our strong progress in electrifying our company car and commercial fleet (over 50% to date vs. 3% achieved by the next best GDN), upgrading our property portfolio and procuring 100% renewable energy at our sites and depots. On waste management, we are now sending less than 3% of waste to landfill, but will continue to strive to get this to zero, achieving a minimum of a 2% year-on-year improvement. We will pay particular attention to single use plastic and PE pipe waste, where, working with our supply chain, we have identified opportunities for improvements.
- We will help long-term sustainable growth by completing biodiversity surveys at all of our 78 key sites and will have achieved at least a 30% improvement across our portfolio. (See section B3 of the Infrastructure chapter).

“We will deliver economic growth through delivering the golden thread of our plan.”

Keeping people warm and powering industry, while protecting the planet

Glossary

AER Annual environmental report
AI Artificial Intelligence
AICR Adjusted interest cover ratio
ALIP Advanced leakage intervention programme
ALD Advanced Leakage Detection
ALMA Advanced Leakage Management Approach
BAU Business as usual
Cadent Foundation Offers grants to charitable organisations for projects which address the root causes and impacts of fuel poverty
Capex Capital expenditure
CAPM Capital Asset Pricing Model
CBA Cost benefit analysis
CCG Customer Challenge Group
CCS Carbon Capture and Storage
Centres for Warmth One of our largest VCMA projects offering support to some of the most deprived areas across out networks
CEO Chief Executive Officer
CISBOT A cast iron pipe-repair robot that seals the joints in natural gas pipelines from the inside
CKI CK Infrastructure Holdings Limited
CO Carbon Monoxide
COMAH Control of Major Accident Hazards
CPIH Consumer Prices Index including owner occupiers' housing costs
CSAT Customer satisfaction
DAWS Direct Access to Wellbeing Services with the NHS
DBP Data Best Practice Guidance
DESNZ Department for Energy Security and Net Zero
DLCA Domestic Load Connection Allowance
DNO Electricity Distribution Network Operator
DPLA Digital Platform for Leakage Analytics
DSI Data Sharing Infrastructure
EAP Environmental Action Plan
EDI Equity, Diversity and Inclusion
EGL Economic growth levers
EJP Engineering justification paper
EN Eastern
ER&R Emergency response and repair
ESG Environmental, Social, and Governance
EV Electric Vehicle
FEE Future Energy Explorer
FES Future Energy Scenarios
FPNES Fuel Poor Network Extension Scheme
FRB Fellowship for Responsible Business
GDN Gas Distribution Network
GLA Greater London Authority
GRESB Global Real Estate Sustainability Benchmark
GSoP Guaranteed Standards of Performance
GW A gigawatt is a unit of energy equal to a billion watts
HS2 High Speed 2 railway
HSE Health and Safety Executive
IMRRP Iron Mains Risk Reduction Programme
IT Information Technology
KS1 and KS2 Compulsory national curriculum at primary school
ktCO$_2$ Unit of measurement for GHG emissions. It standardises greenhouse gases into units of kilo-tonnes of carbon dioxide equivalent
LDZ Local Distribution Zone
LGBTQ+ Lesbian, gay, bisexual, transgender and queer or questioning
MJP Major Project Justification Papers
MOB Multi-Occupancy Building
NARM Network Asset Risk Metric
NESO National Energy System Operator
NHS National Health Service
NIA Network Innovation Allowance
NL North London
NW North West
Ofgem Office of Gas and Electricity Markets
Opex Operational expenditure
Ops 4.0 Continuous improvement methodology
PE Polyethylene
Picarro Leakage detection vehicle with mounted sensor
PSR Priority Services Register
RAG Red, Amber, Green
RAV Regulatory Asset Value
Repex Replacement Expenditure
RESP Regional Energy Strategic Planners
RIIO Ofgem's regulatory framework (Revenue = Incentives + Innovation + Outputs)
RIIO-1 Price control for gas distribution networks – 1 April 2013 until 31 March 2021
RIIO-2 Price control for gas distribution networks – 1 April 2021 until 31 March 2026
RIIO-3 Price control for gas distribution networks – 1 April 2026 until 31 March 2031
RIIO-4 Price control for gas distribution networks – Post 1 April 2031
RIIO-ED2 Price control for electricity Distribution Network Operators (DNOs) – 1 April 2023 to 31 March 2028
RoRE Return on Regulated Equity
RRP Regulatory Reporting Pack
SCG Sustainability Challenge Group
Scope 1 All Direct Emissions from owned or controlled sources
Scope 2 Indirect Emissions from the generation of purchased electricity, steam, heating and cooling
Scope 3 All Other Indirect Emissions that occur in a Cadent's value chain
Services Beyond the Meter A range of additional services that are designed to help customers get their households and appliances back on gas.
SIF Strategic Innovation Fund
SLM Shrinkage Leakage Model
SROI Social return on investment
SSMD Sector Specific Methodology Decision
tCO$_2$e Tonnes (t) of carbon dioxide (CO$_2$) equivalent (e)
Tier 1 iron mains and services within 30 meters of a property – 8 inches and below
Tier 2 iron mains above 8 inches and below 18 inches
Tier 3 iron mains18 inches and above
TMR Total Market Return
Totex Total Expenditure
TWh Terawatt-hour is a unit of energy
VCMA Vulnerability and Carbon Monoxide Allowance
WACC Weighted average cost of capital
WiC Women in Cadent
WM West Midlands

Cadent

Your Gas Network

cadentgas.com