Cadent
Your Gas Network

RIIO-3 Draft Determinations

Our response to Ofgem Gas Distribution Document

August 2025

Navigating our response

Cadent's response to Ofgem's RIIO-3 Draft Determinations is structured as follows.

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Ofgem Question Reference	Annex Reference	Annex Title
GDQ2	GDQ2-1	[redacted]
GDQ2	GDQ2-2	OGMP 2.0 assurance report
GDQ32	GDQ32-1	Errors in Ofgem's Draft Determinations Cost Assessment Model
GDQ33	GDQ33-1	IT detailed reponse
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About this document

This document covers our responses to the questions in the Gas Distribution document of the Draft Determinations. To support our response, we have also provided annexes with key evidence and analysis such as additional engineering information and expert consultant reports.

Contents

GDQ1. Do you have any views on our proposed approach for the GD-specific environmental commitments, costs and targets?

We welcome the acceptance of our Environmental Action plan and have been working with other networks to agree on a common reporting template for the Business Carbon Footprint and on how we might move over the course of RIIO-3 from a modelled view of leakage and shrinkage to observed measures. This is an important area where our stakeholders are looking for us to take action in RIIO-3. The following response provides more detail on the following areas of the GD-specific environmental commitments, costs and targets:

I. Environmental Action Plan and the Annual Environmental Report
II. Establishing common Business Carbon Footprint Targets
III. Shrinkage targets
IV. DPLA
V. Cost and commitments for zero-emissions vehicles
VI. Science based targets
VII. Biodiversity and Natural Capital
VIII. Further detail on Business Carbon Footprint Targets

i. Environmental Action Plan and the Annual Environmental Report (AER)

We welcome the DD's broad acceptance of our Environmental Action Plan (EAP) costs, commitments and targets. We will continue to work with Ofgem through the Ofgem-led Environmental Working Groups to discuss the AER guidance document to understand expectations on how we report against the EAP.

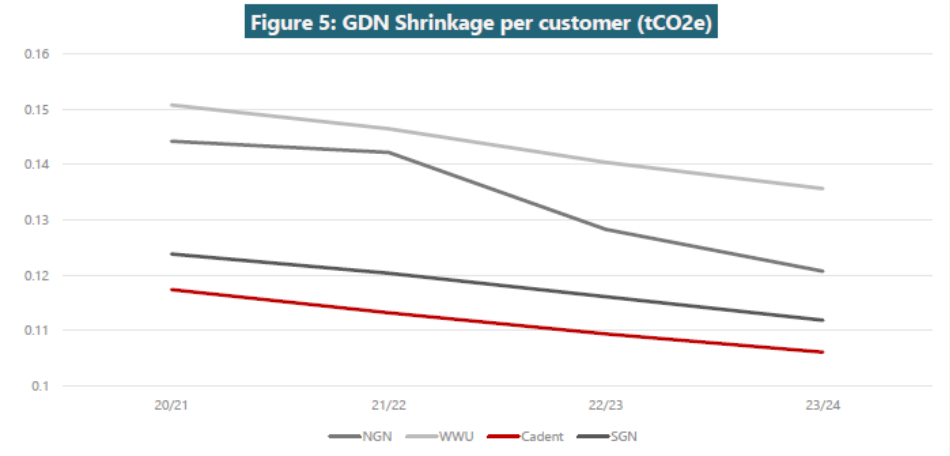
In particular, and explained further in section vii, we would like to discuss the potential costs, time requirement and expectation of collaboration with biodiversity stakeholders when preparing this report. We would welcome the time and opportunity to further understand this requirement, as we have active engagement with third-party consultants for Biodiversity Net Gain guidance on relevant projects and have started external verification with The Wildlife Trust for biodiversity benchmarking throughout RIIO-2 so far.

ii. Establishing common Business Carbon Footprint targets

We note Ofgem had rejected all GDN's proposed BCF targets due to varying methodologies in each EAP, and we have looked to address this by working with the other GDNs to create a common reporting methodology which we present in this response. Whilst we have developed a common reporting template (which excludes shrinkage) there remains risk that company performance in the remaining elements is not comparable. For example, we have not included offsetting in our targets, and we are concerned that some companies' ambitions may have (as the narrative of their plans does not seem to match some of the reported targets - for example, showing zero emissions yet the maintenance of diesel vehicles). This would skew any comparison of underlying performance leading to the plans not being assessed on a comparable basis. We expand on the work on the comparable targets in section viii below.

iii. Shrinkage targets

We welcome the acceptance of our Shrinkage targets, but we note that the targets are expressed in the business plan data tables based on the Shrinkage and Leakage Model (SLM). Under the SLM, our targets are challenging given we have exhausted the benefits in RIIO-1 and RIIO-2 from pressure management and gas conditioning which have driven the lowest leakage per customer across the sector. The graph below (Figure 5) illustrates this.



In addition, our plan includes our sector transforming innovation to use technology and digital analytics to deliver advanced leakage management using best practice from around the world. Our plan's proposed rollout of advanced leakage detection, development and implementation of the digital platform for leakage analytics will enable us to proactively manage leakage through a more targeted intervention plan on the leakiest assets both within our Iron Mains Risk Reduction Programme and for the metallic assets that fall outside that programme. Our plans for RIIO-3 for both the IMRRP and our proposed Advanced Leakage Management Approach we estimate could potentially deliver up to twice as much actual leakage reduction as that estimated in the SLM based figures in the Business Plan Data tables as shown in the table below.

Potential leakage reduction estimates over RIIO-3 IMRRP and ALIP combined				
	ktCO2e reduction		**GWH reduction**	
	Units	%	Units	%
Shrinkage & leakage model	-203	-18%	-164	-17%
Advanced Leakage observed	-339	-35%	-245	-35%

We did not reflect this in the data table as the Business Plan Guidelines required estimates to be based on the shrinkage and leakage model for comparison hence it does not reflect the full extent of our plan's ambition and that Cadent will be utilising observed data to drive additional leakage reductions ahead of the rest of the industry.

Again, it is important that this is taken into account when comparing the relative ambition and stretch of the business plans on shrinkage and leakage reductions (please see our response to CADQ11 where we set out how we think this has not been the case for the Draft Determinations).

iv. DPLA

As discussed in section 3, we are committed to completing and rolling out DPLA, as well as using it to help create new reporting methodologies. Our leadership of DPLA, further outlines our commitment to proactively targeting Shrinkage across the Networks, and we support the allocation of baseline funding for Cadent and for other networks to use uncertainty mechanisms as they are less advanced on plans at this stage. We have been helping other GDNs with their plans adopt the DPLA and new reporting methodologies.

We see ALD technologies as being the data provider for "new" leakage reporting methodologies, and DPLA as a key step in the process, completing the required analysis of this data to provide consistent reporting.

We are exploring and investigating international best practices and benchmarks for emissions reporting. We are minded to use the OGMP 2.0 standard/reporting framework as a foundation for GB's new reporting standard. Other gas distribution companies internationally have adopted this framework.

We recognise that we are not the only stakeholder in the decision as to what is next and therefore suggest that an industry consultation is appropriate.

We support the requirement for a co-reporting period of both observed and SLM data from DPLA. Our emission targeting work will not be reflected in the reporting methodology of the SLM, therefore, to show that we are making progress through DPLA by finding and targeting our large emissions, we will also need to report the emission data from the DPLA.

We anticipate several years of co-reporting emissions from the DPLA and SLM in the Annual Environmental Report (following agreed AER guidance requirements after Final Determination) to assess the output of DPLA and demonstrate that it is a stable reporting methodology.

We are open to and would support an assurance regime as the reporting and technological changes due to the DPLA constitute a material update in several areas of environmental, safety and asset management processes.

V. Costs and Commitments for zero-emissions vehicles

We agree with the **'Cost and Commitments'** that recognise the increase in costs to support the costs associated with our zero-emissions commitment. We have gone much further than the other GDNs with our investment in a zero-emissions fleet over RIIO-2, converting over 500 vehicles to date. Across RIIO-3, we will look to extend the life of our current EV fleet and use a strategy of "best alternative" for the replacement of further fleet vehicles currently using an Internal Combustion Engine. We are also looking to reduce the overall number of vehicles in our fleet, primarily through trialling new working practices and logistics models.

vi. Science-Based Targets

As gas network operators, we recognise the need for robust and responsible emissions targets. Gas Distribution Network (GDN) greenhouse gas emissions are dominated by shrinkage (>90% of the total). The Science-Based Targets initiative (SBTi) has developed a series of standard methodologies for carbon reduction pathways to net zero for a range of industries. Such standards stipulate that targets must include all aspects of Scope 1 and 2 emissions, so for GDNs, this would include Shrinkage and Business Carbon Footprint emissions.

SBTi's proposed Oil and Gas Standard aims to establish a responsible pathway to net zero for our sector and has been under development for a number of years. During the preparation of the GDN's RIIO-GD3 Business Plans, it was assumed that this Standard would become available in the near future and certification by GDNs could be sought. Subsequently, in April 2025, SBTi have stated that development of the Oil and Gas Standard has now been officially paused. This leaves the GDNs in the position of being unable to attain SBTi certification of carbon targets currently, or in the near future. If the Oil and Gas Standard is developed and published during the RIIO-GD3 price control period, we will aim to seek validation, subject to consideration of cost and value to stakeholders.

vii. Biodiversity and Natural Capital

We note that under Biodiversity and Natural Capital, Ofgem has asked for the GDNs to 'collaborate with biodiversity experts, charities and consultants when preparing their Annual Environmental Reports (AER's). While we stated that we would "…further commit to explore wider opportunities to enhance and protect biodiversity. We will consider how we can engage our employees, stakeholders, and the wider communities where we operate."

During RIIO-3, we do not agree with a blanket commitment to engaging with specialists. This should be discussed as part of the development of the AER Guidance after Final Determination, as we would like to understand the cost and resource implications of doing this. However, Cadent will continue with the engagement established during RIIO-2 with our relationship with The Wildlife Trust for Biodiversity Benchmarking assessments, local wildlife groups through volunteering, and an external ecologist consultancy for guidance, support and surveys for our environmental actions.

viii. Further detail on the Business Carbon Footprint (BCF) Targets

During the development of our Business Carbon Footprint and Shrinkage targets, we worked with the Customer Challenge Group (our Independent Stakeholder Group, ISG) during the development of our business plans and Environmental Action Plan.

Our Sustainability Challenge Group (SCG) (a sub-group of our customer Challenge Group) has pushed for greater clarity, ambition, and integration of environmental goals into our business planning. The revised targets and our Environmental Action Plan therefore reflect a more mature and stakeholder-informed approach to reducing Cadent's carbon footprint. The SCG sought to understand the company's operations and where sustainability benefits could be achieved, and whether or not the level of ambition was challenging. This challenge spurred us to look at benchmarks across other industries and shaped our thinking. The SCG recognised changes reflected in both the metrics chosen for the sustainability strategy, specifically relating to the emissions reduction target and in the rationale, narrative and phasing of the strategy and its implementation as a result of their engagement.

In the Draft Determination, Ofgem identified that Ofgem '*expect the GDNs to work together to apply a consistent methodology for setting BCF targets and to re-submit targets in their Draft Determination responses*'. Ofgem identified difficulties in comparing the targets as presented in the RIIO-GD3 business plan submissions due to varying base years and methodologies asked for all GDNs to work together to apply a consistent methodology for setting Business Carbon Footprint (BCF) targets and to resubmit targets in our Draft Determination Response.

Following the Draft Determination, the four Gas Distribution Networks (GDNs) have collaborated to revise their Scope 1 and 2 Business Carbon Footprint (BCF) targets, ensuring a common baseline year, end year, and methodology. These targets are presented in the table below, alongside their assumptions, and supersede those presented in the individual GDN RIIO-GD3 business plan submissions. GDN have agreed on the following Business Carbon Footprint targets based on Environmental Action Plans.

We have achieved a 26% reduction in scope 1 and 2 (excluding shrinkage) since the 2019/20 baseline (from 2019/20 33,696.85 tCO_2e to 024/25: 24,710.57 tCO_2e, reflecting our commitment to decarbonising across our operations. This has been driven by our successful implementation of EV First Responder vehicles, strong uptake in EV and PHEV company cars across our fleet, hybrid work options for some areas and a reduction in gas and electricity consumption from our office and depots due to increased energy efficiency initiatives. We have exceeded our business mileage intensity EAP action through the company car EV policy, and to date, with 504 EV first responders in our fleet. Our early adoption of low-emission vehicles has positioned us ahead of other GDNs entering RIIO-GD3 with a lower emissions baseline.

We appreciate the importance of transparency and consistency in tracking environmental progress. However, comparing emissions reductions across the price-control period presented several challenges. While methodologies are now aligned, historical data and assumptions to meet the RIIO-GD3 target year emissions across GDNs may still differ slightly, or it is challenging to understand how this will be achieved. This alignment improves transparency but does not eliminate all challenges in comparing emissions reductions across the period. Minor differences remain in how low-materiality sources (e.g., F-gases, EV electricity) are treated across networks. For example, NGN are looking to purchase 300 diesel vans, but in their Business Plan, EAP targeted zero emissions for their Scope 1

commercial fleet and appears to have excluded market-based emissions from natural gas combustion in premises. SGN have stated that they will replace 1,838 diesel vans with an opportunity for 295 EV vehicles only. Hence, the targets and ambitions may not still be directly comparable.
We have not included any offsetting of our carbon footprint emissions (for Scope 1, 2 and 3), and whilst we will still have to use diesel and petrol commercial fleet in operation to bridge the operational need with those vehicles available on the market, there will be reportable carbon emissions associated with this. We will continue to procure renewable and certified-backed gas and electricity for our depots and office, and this will be reflected when we report on our market-based performance. Further energy efficiency plans and building management will drive consumption reductions further.

Network	Baseline		Target		% Reduction over period	Market-based or Location-based methodology?
	Year	tCO_2e	Year	tCO_2e		
Cadent	2023/24	**27,180**	2030/31	**25,833**	5.0	Location-based
EoE		*9,693*		*9,368*		
NL		*6,207*		*5,823*		
NW		*6,854*		*6,498*		
WM		4,427		*4,144*		
NGN		5,736		2,021	64.8	
SGN		18,215		14,247	21.8	
WWU		12,691		11,905	6.2	

Network	Included in baseline and target?						
	Scope 1 - Shrinkage	**Scope 1 - stationary combustion (metered natural gas in premises/infrastructure)**	**Scope 1 - mobile combustion (vehicles)**	**Scope 1 - mobile combustion (plant/equipment)**	**Scope 1 - F gases**	**Scope 2 - electricity use in premises**	**Scope 2 - electricity use in electric vehicles**
Cadent	N	Y	Y	Y	Y	Y	Y
NGN	N	Y	Y	Y	Y	Y	Y
SGN	N	Y	Y	Y	Y	Y	Y
WWU	N	Y	Y	Y	N (de minimis)	Y	Y (incl in premises)

Assumptions relating to the presented targets:

1. Each GDN presented bespoke BCF targets within their RIIO-GD3 Environmental Action Plan. Ofgem identified difficulties in comparing these targets due to varying base years and methodologies. The targets presented represent amended targets to aid comparative analysis by Ofgem.
2. Business Carbon Footprint (BCF): Scope 1 and 2 emissions, excluding gas shrinkage and theft of gas. The targets presented here cover all material Scope 1 and 2 emission sources for all GDNs; however, there may be some variability across low materiality items.
3. Targets are presented under the same assumptions as those in the RIIO-GD3 business plan submissions.
4. 2023/24 has been selected as the common base year for all GDNs for the presented aligned RIIO-GD3 BCF targets to minimise any impacts of the COVID-19 period and align with the final data used for the RIIO-GD3 business plan submissions.
5. Baseline emissions and target emissions are presented on a location-based methodology for consistency.
6. Baseline emissions are taken from 2023/24 Annual Environmental Report submissions and RRP.

GDQ2. Do you have any views on our proposed funding for the DPLA and ALD?

We welcome the support Ofgem has given DPLA & ALD in the Draft Determination. We note paragraphs 3.25 and 3.26 and welcome the acknowledgement of our extensive work and leadership in this area across the industry during RIIO-2 to trial leak detection and develop the DPLA through the SIF. As noted in the response to CADQ11, we believe our plan, level of ambition, and the proactivity we've demonstrated in RIIO-2 should be recognised more favourably in the BPI Stage C, part 2 assessment.

With regards to DPLA:

We support the proposed baseline funding. We will continue to communicate and share our learning regards DPLA rollout with other networks and support its adoption by the GDNs.

With regards to ALD:

We support the inclusion of this in baseline funding for RIIO-3.

We support Ofgem's separate draft determination on our February 2025 ALD NZASP re-opener, approving the needs case and proposed roll out plan for vehicles. We will respond to the NZASP re-opener draft determination separately. Our response here assumes no adjustments to our RIIO-GD3 allowances; however, based on the NZASP re-opener draft determination, we expect adjustments to take place.

Per the request in paragraph 3.30 in the GD Annex, Ofgem requested further information on:

- The details of chosen technology and technology provider
- A breakdown of costs attributed to the technology provider, vehicles, vehicle maintenance, drivers, project managers, survey teams, project managers and IT integration.

We set out our response to this request with the following structure:

a) Technology volumes required and rationale
b) Technology and service costs
c) IT & other costs

a) Technology volumes required and rationale

In September 2024 (and included in Cadent's Business Plan) we made estimates of the required technology coverage to support the DPLA and meet HSE policy. These estimates were provided to the other GDNs as recommendations from the DPLA project team. The volumes of technologies included in our RIIO-3 plan are shown in Table 1.

Table 1. GD3 Submission Technology Volumes

Network	Technology	GD3 Submission Volumes
East of England	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
North London	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
North West	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
West Midlands	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
Cadent Total	**Vehicle Mounted**	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]

The key assumptions made for each technology are summarised in Table 2.

Table 2. GD3 Submission Technology Assumptions

ALD Vehicles	Fixed Sensors	Hand-held devices
• One unit can cover 4,000 km/year • Entire MP & LP network will be surveyed once per year	• 5% coverage of NTS and PRS • [redacted] sensors installed per site	• [redacted] Surveys per week ([redacted] total)

Since making our business plan submission, we have received an assurance report from a third party, Highwood Emissions Management, who benchmarked our plans for ALD and DPLA against the Oil and Gas Methane Partnership 2.0 (OGMP 2.0) – attached as Annex GDQ2-2. This is a globally recognised methane emission reporting framework developed by the United Nations Environment Programme (UNEP). The DPLA project team judged it to be the appropriate benchmark to reference. Highwood's assurance report revealed the following:

- Materiality analysis demonstrated the emissions from mains, services, NTS offtakes, and PRS (when combined) represent over 95% of total emissions, making them critical targets for OGMP 2.0 compliance. HP & IP pipeline emissions are low materiality.
- Our plan for ALD surveillance of mains and services meets the OGMP requirements.
- Sampling and measurement strategy for large above ground installations requires enhancements:
    - Increased technology quantities required to meet the sampling requirements at large above ground installations, such as offtakes and large AGIs.
    - Handheld sensors and survey procedures are essential for source-level quantification, differentiating between fugitive and vented emissions, and validating fixed sensor data.

This OGMP 2.0 assurance report is attached to this submission (Annex GDQ2-2) and its outcomes have been shared with the other GDNs. As a result of these findings, we have made updates to our ALD plans:

- We have not changed any quantities or cost estimates with regard to vehicle-mounted sensors and continue to follow the rationale that we set out in SQ038 to our business plan, which is attached to this response (Annex-GDQ2-1).
- For fixed and hand-held sensors for above-ground installations, we have learned that an increased number of both these sensors will be required to meet the minimum requirements of OGMP 2.0. These increases are due to the requirement to:
    - Monitor 50% of offtake sites
    - Monitor 10% of large (HP-inlet) AGIs

This sampling coverage requires increased volumes of fixed sensors and handhelds. We have included only these volumes, which are required to meet the minimal requirements of the OGMP 2.0 standard.

With the above in mind, our revised plan/ recommendation is in Table 3.

Table 3. DD Response Technology Volumes

Network	Technology	DD Response Volumes
East of England	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
North London	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
North West	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
West Midlands	Vehicle Mounted	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]
Cadent Total	**Vehicle Mounted**	[redacted]
	Fixed Sensors	[redacted]
	Handheld Sensors	[redacted]

The updated key assumptions for each technology are summarized in Table 4.

Table 4. DD Response Technology Assumptions

ALD Vehicles (no changes)	Fixed Sensors	Hand-held devices
• One unit can cover 4,000 km/year • Entire MP & LP network will be surveyed once per year	• 50% coverage of NTS Offtakes and 10% coverage of large AGIs • [redacted] sensors installed per site	• [redacted] handheld device for every [redacted] operational areas

In developing our plans for emissions reduction, we have been in frequent dialogue with the HSE. Our plans are informed by these conversations and will allow us to comply with the updated IMRRP enforcement policy.

b) Technology and service costs[1]

Cost estimates have been updated based on the increased technology quantities described above. Unit costs remain the same as in our RIIO-3 plan and are informed by unit prices from the suppliers used in the technology trials and pilots to date. The procurement of all aspects of ALD has not been completed and so these are the best information to inform our plan. The updated technology costs are shown in the Table 5.

Table 5. Updated Technology and Service Costs

Network	Item	Cost	
		GD3 Submission	DD Response
East of England	Vehicle Mounted	[redacted]	[redacted]
	Fixed Sensors	[redacted]	[redacted]
	Handheld Sensors	[redacted]	[redacted]
North London	Vehicle Mounted	[redacted]	[redacted]
	Fixed Sensors	[redacted]	[redacted]
	Handheld Sensors	[redacted]	[redacted]
North West	Vehicle Mounted	[redacted]	[redacted]
	Fixed Sensors	[redacted]	[redacted]
	Handheld Sensors	[redacted]	[redacted]
West Midlands	Vehicle Mounted	[redacted]	[redacted]
	Fixed Sensors	[redacted]	[redacted]
	Handheld Sensors	[redacted]	[redacted]
Cadent	**Vehicle Mounted**	[redacted]	[redacted]
	Fixed Sensors	[redacted]	[redacted]
	Handheld Sensors	[redacted]	[redacted]
	Total	[redacted]	[redacted]

*As the Feb 2025 ALD NZASP re-opener has not reach final determination, our response here assumes no adjustments to our RIIO-GD3 allowances. Based on the NZASP re-opener draft determination, we expect adjustments will need to take place.

[1] Figures set out in this response correspond to data we have provided to Ofgem in DDQ67 which we have submitted to Ofgem alongside this response for incorporation into its Final Determination.

Further detail on these costs, to the level of detail requested in paragraph 3.30 is in Table 6 below.

Table 6. Updated Cost Breakdown

Item	Breakdown			Total	Comments
	Technology	Vehicles	People		
Vehicle Mounted	[redacted]	[redacted]	[redacted]	[redacted]	1 driver [redacted] & hired vehicle [redacted], plus fuel [redacted] per ALD unit.
Fixed Sensors	[redacted]	[redacted]	[redacted]	[redacted]	People cost based on moving sensors once per year ([redacted]).
Handheld Sensors	[redacted]	[redacted]	[redacted]	[redacted]	Based on survey resource to visit 85 sites. Estimated using actual rates we see for similar workstreams.
Total	[redacted]	[redacted]	[redacted]	[redacted]	

c) IT and other costs

Costs to scale up the DPLA MVP (which includes APIs from ALD providers) to all Cadent's networks are included within the [redacted] Ofgem proposed to fund at Draft Determination. This [redacted] is separate to the costs presented in section b) of this question response.

GDQ3. "Do you agree with our proposed design of the 7 and 28-Day Repair Standards ODI-F, including the proposed performance targets and incentive rate?"

We do not support the Draft Determinations introduction of a 7-and-28 Day Repair Standards ODI-F for a number of substantive reasons:

1. It incorrectly assumes that the number of days before final repair directly correlates with emissions and/or safety risk, and that all leaks emit at the same rate. This leads to the incentive value attributed to this measure significantly overstating the environmental benefits it would deliver, particularly when compared to the RIIO-2 emissions incentive.
2. It incentivises companies to focus on short-term quick fixes, rather than addressing underlying asset health issues with targeted and resilient interventions. Which could lead to greater disruption and costs.
3. It does not account for the impact of non-mandated larger diameter pipes on repair times. This impact increases over time due to the completion of the HSE Tier 1 Iron Mains Risk Reduction Programme and through the deterioration of non-mandated pipes. The impact also varies by region dependent upon the proportion of larger diameter, Tier 2 and 3, pipes within a specific network's asset base, which is most notable in our London network.
4. It does not recognise the potential reporting inconsistencies across networks, which would impact the comparability of performance and is likely to mean that performance is better than has been reported in RIIO-2 for some GDNs.
5. It leads to potential duplication, or contradiction, with existing incentives that GDNs have to manage repairs effectively and efficiently.

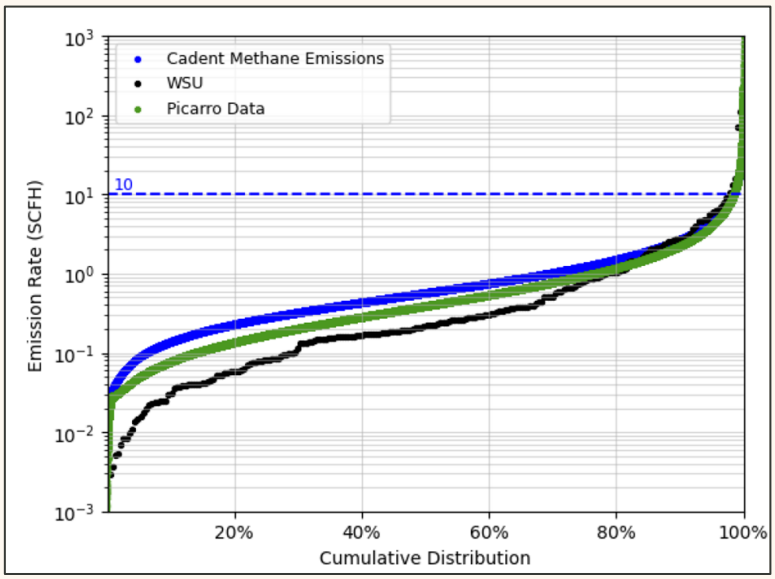
We discuss and highlight the key evidence for each of these in the detailed sections of our response below.

Overstatement of customer benefits

We support an increased focus on emissions reduction. With new technology becoming available, we see the opportunity to transform the management of leakage from estimated to observed and from reactive to proactive as the essential solution to tackling GDN leakage.

Our business plan proposed to reduce leakage through an Advanced Leakage Management Approach (ALMA), which would deliver a further 10% reduction in emissions from our network. Using ALMA, we will continue to lead the industry transition from a modelled approach for estimating leakage to an empirical, data driven approach that uses Advanced Leakage Detection (ALD) data further empowered by a Digital Platform for Leakage Analytics (DPLA) which enables the optimal interventions to be identified.

ALD provides strong evidence that the vast majority of emissions are driven by a small number of leaks (see the distribution curve in the graphic below). This data can be used to develop proactive intervention programmes that targets the largest leaks.



However, the analysis that underpins the Draft Determination to introduce a repair ODI overlooks this critical feature of leakage, by assuming that all leaks emit at the same rate. This results in a significant overstatement of the expected benefits of reducing repair times. It could also create a perverse incentive for a company to prioritise response to high-volume small leaks with quick fixes, whilst potentially deprioritising low volume long-term fixes to more significant leaks – as the metric could assess this as good performance. This is detailed further later in this response.

It should also be noted that these mains will have been leaking before the GDN were notified, via a Public Reported Escape (RPE), and the Repair team appointed. Indeed, it is likely that the majority of leakage could have occurred ahead of the PRE. Speeding up reactive Repair times will not tackle this leakage before the PRE, however the rollout of ALD coupled with DPLA would enable targeted proactive intervention to tackle the leak before it is reported.

In addition to overestimating the environmental benefits of incentivising quicker repairs, the Draft Determination also overlooks the comparative benefits between quicker repairs and managing average system pressures (ASP) and gas conditioning. This results in the power of the incentive being overpowered in the Draft Determination.

For Cadent, the RIIO-2 emissions incentive, which incentivises the management of ASP and mono-ethylene glycol saturation levels, is capped at around +/-0.05% RoRE. The RIIO-3 Draft Determination proposes a cap of -0.17% RoRE for the 7- and 28-day repair ODI, so almost four times the value of the RIIO-2 incentive.

This is not justified or proportionate to the benefits that it delivers in comparison to the RIIO-2 incentive. Managing ASP particularly delivers significantly greater benefits than speeding up repairs. For example, based on a data share from 2022/23 it shows that if Cadent increased the ASP of our networks to be in line with the average of other GDNs our leakage would increase by around 8%, this would be even higher if based on NGN's ASP data alone.

As such, the evidence suggests that the benefits of introducing an ODI for 7 and 28 day repairs have been significantly overestimated and if there were to be an environmental incentive in RIIO-3 it would deliver more benefits if it was focused on proactive measures – i.e. stopping the leaks happening in the first place rather than driving financial focus onto reactive measures of stopping them more quickly.

Should the strong evidence, demonstrating that a new repair ODI should not be introduced for RIIO-3, not be accounted for in the Final Determination then the value of the ODI should at least be much

lower than set out in the Draft Determination, and certainly lower than the value of the RIIO-2 incentive (<0.05% RoRE).

Data errors in underlying evidence

We identified and shared with Ofgem prior to the Draft Determination a number of errors in the analysis underpinning NGN's business plan proposal which resulted in the benefits of their approach are significantly over-estimated. Firstly, there were some spreadsheet errors which overstated the benefits, the two most material errors are shown in the table below.

Tab	Cells	Issue	Impact
CVP 7 gas escapes NGN	H11:Q12	The formula multiplies the # of repairs by the average gas escape time for <7days (U10), not the average escape time that should apply to the repair time period (U11 & U12)	Correcting this mistake increases the hours of leaking that NGN experience. In turn, this decreases the benefit that they are achieving from performing above the 89% Target from £8.0m across GD3 to £4.6m
CVP 7 gas escapes for all regions	Y11:AC11	The formula multiplies the # of repairs by the average gas escape time for <7days (U10), not the average escape time that should apply to the repair time period (U11). This is for the post CVP calculations	This increases the amount of leakage that occurs under the proposed scenario of all companies hitting the 89% target. Therefore, the difference between that and operating at the current baseline reduces, this therefore decreases the total value of underperformance over GD3. It takes the total under performance (sum of all regions except NGN) from £254m to £193m. For Cadent's regions, this reduces the total under performance from £112m to £93m.

When these errors are corrected, the projected benefit from reaching the reduction target in RIIO-3 decreases materially (e.g. by 17% for Cadent networks). It also reduced the total value of outperformance that NGN illustrated it will achieve by 42%.

Secondly, we raised concerns on the methodology underlying the estimated benefits:

- NGN used their own Average System Pressures in the leakage calculation which are much higher than other networks (hence overstating leakage reduction savings).
- An assumption that leaks fully occur from the time of raising an emergency job until the repair is completed (when in reality a number of the repair jobs may not be leaking at all).

Incentivisation of short-term quick fixes, rather than addressing underlying asset health issues

By incentivising companies to complete 89% of repairs within seven days, this measure would focus GDNs on delivering short-term "quick fixes" and could disincentivise them from addressing underlying asset health issues with targeted long-term interventions. In doing so, it is likely to lead to greater disruption within the communities we serve with the need for repeat intervention. This repeat intervention could also lead to greater whole-lifecycle costs and increased customer bills.

For example, if there was a leak on a Tier 1 pipe that was within the scope of the Iron Mains Risk Reduction Programme, and therefore due for replacement by 2032, we would look to explore if this could be prioritised for replacement rather than undertake a repair. In areas where access to the public highway is more challenging, particularly in London, it increases the likelihood that our assessment would recommend replacement as the optimal intervention – to avoid the need of returning at a later date to undertake another intervention. However, this intervention approach would result in the repair being closed in a longer timescale.

We have included a case study below of a job in a sensitive area of London where we opted for a non-repair intervention that significantly impacted the time it was closed in. If we were required due to the risk of penalty, by the introduction of this incentive, to prioritise quick repairs in all scenarios we would need to take a different approach with the stakeholders in this case study which would likely damage our long-term relationship with them, impacting future works, and leading to dissatisfaction as a result of the increased disruption.

Case Study: Sloane Square

Gas remedial works in London often require significantly more time to plan and execute than in our other networks due to a range of external factors. These include high footfall, sensitive commercial environments, and complex stakeholder landscapes.

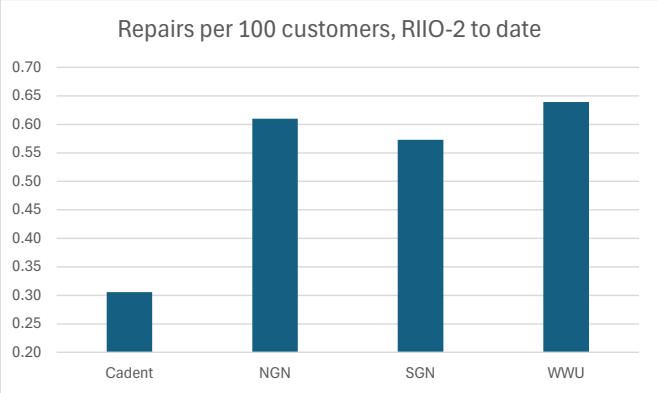
A prime example of this is a recent escape at Sloane Square, where we had to carefully coordinate with multiple stakeholders to minimise disruption to affect a long-term solution to a Public Reported Gas Escape.

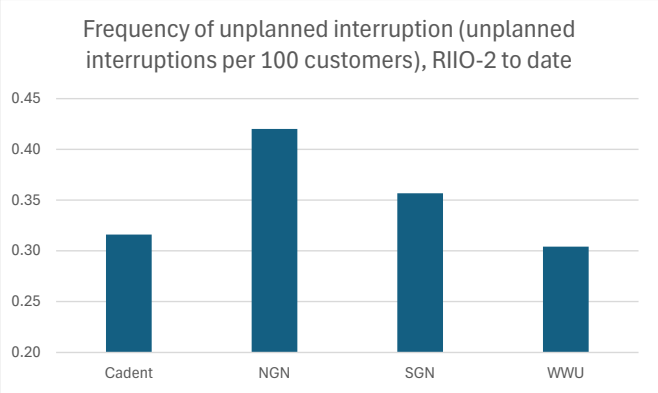
Key considerations from this example included:

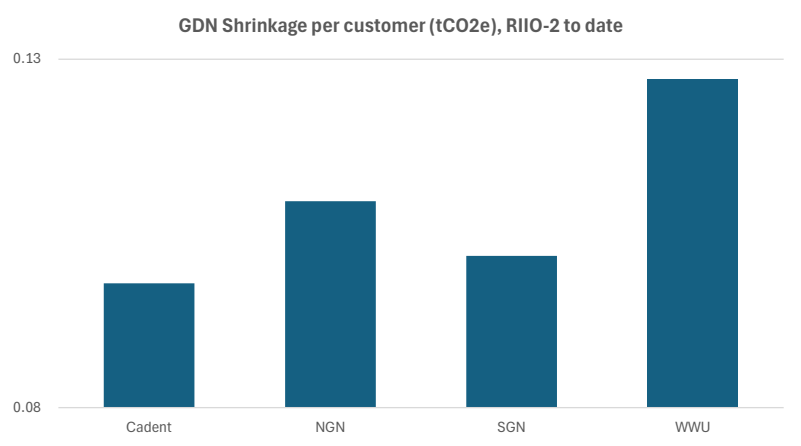
- **Seasonal Constraints**: The area hosts 'al fresco' dining in the summer and Christmas Markets in the winter, limiting the available working windows.
- **High-profile location**: Sloane Square is a hub for tourists and high-end retail, requiring a sensitive approach to avoid negative reputational impact.
- **Transport Infrastructure**: The presence of taxi stands and busy pedestrian routes added complexity to traffic and safety planning.
- **Stakeholder Engagement**: We worked closely with the Royal Borough of Kensington and Chelsea to develop a six-phase plan that allowed us to safely and efficiently 'de-gas' the Square.
- **Minimising Impact**: A single point of Asset Repair would have caused significant disruption. Instead, a planned phased approach helped maintain positive stakeholder relations and public confidence to complete abandonment work and reinforcement all at once. This took significantly longer to plan than a typical asset repair.

All companies will operate, and structure their organisations, slightly differently with varying levels of emphasis towards short-term reactive vs long-term proactive intervention approaches. This can be seen by different rates of adoption of new technologies, such as Advanced Leakage Detection, that support proactive intervention decision making. Whilst there is no single definitive right approach, we believe that a more proactive approach will deliver greater environmental, operational, and financial benefits through the energy transition.

At the moment, the metrics within the RIIO framework for Gas Distribution focus more on short-term reactive measures rather than on long-term proactive ones. The introduction of this ODI will further reinforce this emphasis on short-term decision making. When looking at long-term performance indicators, it suggests that our approach compares favourably with other GDNs.







When we talk to our customers, they prioritise reducing the likelihood of an event (i.e. proactive intervention) over reducing the duration of an event (reactive). Indeed, in our engagement with customers whilst developing our plan 79% agreed that it is more important to invest in the prevention of gas leaks rather than to invest more in systems / processes that rely on the public to report gas escapes. Customer satisfaction scores relating to Emergency and Repair workload also demonstrate that customers are already highly satisfied with the service currently being delivered with all companies scoring well above 9 out of 10 and significantly higher than delivered in RIIO-1. As such, the evidence does not suggest that further regulatory intervention in this area in justified or proportionate.

ERR / Unplanned Interruption customer satisfaction scores by company

Company	2020/21	2024/25	Change since end of RIIO-1
Cadent	9.51	9.65	+0.14 / +1.5%
NGN	9.55	9.65	+0.10 / +1.0%
SGN	9.58	9.77	+0.19 / +2.0%
WWU	9.56	9.65	+0.09 / +1.0%

Impact of asset base changes and regional differences

Notwithstanding the issues around introducing the Repair ODI and the value of the incentive discussed above, in setting targets based on all GDNs historic performance, the Draft Determinations do not take account of either the impacts of changing asset bases over time or regional factors that impact repair times.

Over time a greater portion of leaks on the network will be associated with non-mandated larger diameter, Tier 2 and 3, pipes. These non-mandated larger diameter iron mains are deteriorating over time and therefore the volume of leaks associated with them will increase.
As GDNs complete the Iron Mains Risk Reduction Programme (IMRRP) there will be a lower proportion of leaks associated with Tier 1 mains and the proportion of leaks associated with non-mandated larger diameter piper will increase further. Indeed, assets outside of IMRRP contribute 60%

of mains emissions based on our 2021/22 baseline (or 66% against our 2025/26 baseline).

This impacts repair times as larger diameter mains require more complex work to rectify and are more likely to be located in major roads which will have more challenging access arrangements. As such, it would be expected that, with everything else being equal, that repair times would vary over time. Therefore, using historical data could lead to mis-calibrated targets that do not reflect the evolving nature of the gas network.

Our London network has a higher proportion of Tier 2 and 3 mains than other networks and is also greater impacted by challenging highway access arrangements. We own and operate four networks across Great Britain, and we see that repair times in London are greater impacted by these factors than our other networks.

In addition to having a greater proportion of larger diameter assets, our London network's ability to attend and repair productively and in a timely manner is also recognised as more challenging compared to other networks in Ofgem's cost assessment process. This is due to the nature of the underground assets, road networks and the pre-ponderance of multi-occupancy buildings.

Not adjusting for all of these factors above means that the risk of meeting a minimum standard for repair response times for the London network is much more acute and hence discriminatory.

Reporting inconsistencies across GDNs

Looking at the repair data from RRPs, it is not clear that all networks are reporting on the same basis. For example, it appears that some networks are including a wider pool of jobs on repair than others – for example including Emergency Control Valve repairs in their reporting. We have not included these in our reporting during RIIO-2, and our performance would materially improve if we did update our reporting to be consistent, as shown in the table below.

2024/25	7-day		28-day	
	Cadent RRP	Plus ECV data	Cadent RRP	Plus ECV data
DD Target	75%		90%	
East of England	75%	79%	93%	94%
North London	66%	71%	85%	87%
North West	74%	77%	91%	92%
West Midlands	71%	74%	93%	94%

Existing incentives for GDN to manage repairs effectively and efficiently

The Draft Determination does not take account of the existing measures, both within the RIIO framework and externally, that already incentivise GDNs to manage their repair workload efficiently, safely, with an environmental focus and aligned to customer and stakeholder requirements.

These include:

- The Totex Incentive Mechanism (uncapped), which incentivises GDNs to manage this workload efficiently.
- The Customer Satisfaction (+/-0.17% RoRE) and Complaints (-0.17% RoRE) incentives, which incentivise GDNs to respond to customers' requirements and resolve their issues.
- The Annual Environmental Report (Licence Obligation and ODI-R), which requires GDNs to report to stakeholders on their modelled (Shrinkage and Leakage Model) and observed (through the Digital Platform for Leakage Analytics) shrinkage performance.
- The Gas (Safety Management) Regulations, Section 7.4, require that an escape of gas be stopped within 12 hours of the escape being reported where reasonably practical.

The Draft Determination does not also acknowledge, or present justification for a change in position to, Ofgem's previous consultation to remove a repair measure from the RIIO framework.

Ofgem's decision following consultation stated that "we introduced the RIIO-GD1 reputational repair risk output to encourage GDNs to efficiently repair non-emergency faults in order of risk (proximity to buildings) and time (days since fault was reported). We think that the behaviour this output is incentivising is business as usual and does not require a stand-alone output to drive this outcome. GDNs are incentivised to operate efficiency through the sharing factor. We were unable to identify any significant consumer benefits from it being a RIIO output."

Ofgem has not consulted on a change in this position up until now in the RIIO-3 process, and has not presented any compelling evidence to justify the change in position. Likewise, as stated in a previous section of this response, the analysis that formed part of NGN's proposal to introduce a repair ODI contained errors that overstated the benefits.

As such, the evidence, as previously assessed by Ofgem, demonstrates that there are existing measures that already incentivise the desired GDN behaviours in relation to repair and a stand-alone ODI is not required.

GDQ4. Do you agree with our proposal to enable the GDNs to submit RESP coordination and engagement activities through NZARD and NZASP?

We refer Ofgem to the answers we have provided to OvQ15 and OvQ16. In summary, we think that only large RESP driven capital costs should progress through a re-opener, and that ex-ante funding for all other costs is provided such as through baseline or UIOLI mechanisms. These are not one-off costs so we believe they should be addressed through baseline funding. The use of the NZARD UIOLI would be a short-term solution but does not seem appropriate for what are new BAU costs.

We also note that our customers and stakeholders, who all know that doing nothing is not an option if we are to transition to net zero, will require increasing levels of bespoke support and guidance. This is independent of whether or not there is a RESP process in place.

The primary relationship from a gas network perspective with all our customers and stakeholders is not being moved from the GDNs to the RESP team in the NESO. Through RIIO-2 we have been required to dedicate some resource to supporting our stakeholders through the transition, some of which has been utilised UIOLI funding. As we now move in RIIO-3 into much more delivery focussed engagement, a step change in resource is required. We therefore included additional costs in our baseline funding for resources to support our customers and stakeholders, including back-office technical resources required to support stakeholder and discussions and planning.

Following feedback from Draft Determinations and more specifically in the Cross Sector Working Group on 29 July 2025, we have reviewed these costs and similar net zero transitional costs. We have concluded that we should move £6.6m relating to customer and stakeholder support and engagement from baseline funding, into the NZARD UIOLI. This would necessitate Cadent's NZARD UIOLI allowance being increased by the same amount.

GDQ5. Do you have any feedback on our approach to assessing non-mandatory repex workloads?

Our response is separated into the two main areas of non-mandatory repex: Cost Beneficial Mains and Multiple Occupancy Buildings.

1. Cost Beneficial Mains Replacement

The DD Proposal

The DD proposes to reject our chosen option for the Advanced Leakage Intervention Programme (ALIP) on engineering grounds and instead proposes to fund a programme of similar scale to RIIO-2 volumes. We do not support this position, and our objections have been set out separately, in response to CADQ5, through our bilaterial engagement with the engineering team on the 22nd July and the additional clarification added to a revised version of EJP09, submitted as part of our DD response.

How the Cost Benefit Analysis Approach is applied

We have proposed spending which is justified by a clear needs case with demonstrable benefits to consumers exceeding costs, and that protects consumers from uncertainty around the future of gas.

It is important that we invest in the network to deliver a lower whole life cost and consumer benefits over the expected life of the network. Our view, supported by evidence from work we have carried out into the future role of the gas network in delivering net zero[2], is that there will be a need for a gas network of some description well beyond 2040.

In our May 2024 publication, The Future of the Gas Network, we reviewed a wide range of data sources and independent evidence that concluded even under high electrification pathways the gas distribution network will play a vital role in supporting net zero. Gas generation will continue to be required to back up intermittent renewables and could provide a cost-effective secondary heating source for hard to electrify homes through hybrid heating systems. We estimate that by 2040, even under the most aggressive scenarios, 6.3m domestic customers will still be connected to our network. This implies a large consumer base beyond the 11-year payback period horizon, mitigating the impacts of investments on bills.

Given this, there is no objective justification for an 11-year payback for non-mandatory workloads.

We are also concerned about the implications of shortening payback periods for non-mandatory workloads for our wider asset management programme to comply with the Pipelines Safety Regulations (PSR). Under regulation 13 of PSR, we have an absolute obligation to ensure that pipelines are maintained in an efficient state, in efficient working order and in good repair. When HSE first made Tier 2 and Tier 3 iron decommissioning risk removal subject to CBA at the beginning of RIIO-GD1 the payback period was set at 24 years. This was subsequently reduced by Ofgem to 16-years and the DDs are now proposing to reduce the payback to 11 years[3]. Any further reductions in RIIO-GD4 would create a framework for iron mains replacement investment decision far removed from the HSE's original policy intent.

We accept that Ofgem might use a shorter payback to limit the level of allowed expenditure which might otherwise lead to an unacceptable bill increase. However, this needs to be balanced against wider safety considerations and asset management consequences for customers, ensuring that we can comply with our statutory obligations.

[2] Cadent, 'The Future of the Gas Network- the crucial role gas networks will play in delivering net zero' (2024), https://cadentgas.com/getmedia/7ea32d9a-27b0-4162-9c21-d2918e8352f9/Cadent-Gas_The-Future-of-Gas-Report_FINAL.pdf

[3] Ofgem's CBA template uses the Spackman methodology. The Spackman methodology makes it difficult to pinpoint a clear payback period. In contrast, other cost-benefit approaches allow for straightforward identification of point at which realised benefits exceed total costs. Accordingly, this response does not imply the Spackman methodology.

2. Multiple Occupancy Buildings

We do not support the DD's proposed approach to assessing repex in EJP10 and EJP11. Our engineering justification documents provide a detailed overview of our methodologies, with further supporting information provided through our engineering bilaterial (on 22nd July 2025) to demonstrate the necessity and proportionality of our proposed interventions.

EJP10 MOBS Risers:

Our RIIO-3 proposals for proactive riser interventions are built on a targeted, structured, risk-based methodology that aligns with Ofgem's principles of cost-efficiency, safety, and asset health. The DD appears to undervalue the risks associated with deferring planned interventions, especially in high-rise and medium-rise buildings (HRBs and MRBs) and places undue reliance on reactive strategies, which are inherently limited in scope and timeliness.

Our Building Safety Scoring (BSS) framework offers a quantifiable, asset-level risk assessment model, incorporating weighted factors for likelihood, consequence, mitigation, and survey confidence. This methodology has already proven effective under RIIO-GD2, where targeted interventions led to an average 95% reduction in BSS.

For metallic risers in RIIO-3, we apply a threshold of 88,000 to identify assets at risk, with interventions triggered above 100,000. Out of 114,000 risers, 25,885 exceed this threshold—[redacted]

EJP11 PE Risers:

Medium Rise Buildings (MRBs)

Following the feedback at our bilaterial with Ofgem's engineering team on the 22nd July and positive feedback on our risk assessment and building score approach, we have used the latest data sets to confirm the volumes of work required on our MRB assets. As a result, our total volume of MRB interventions has reduced by 63.

Please refer to our response to CADQ14 for a more granular breakdown of our response to the engineering review for EJP11 PE Risers.

High Rise Buildings

The need to intervene and replace PE risers on HRBs is rooted in our core obligation to manage our network safely, the prevailing legislative landscape and the heightened public awareness regarding gas safety and the use of combustible materials in multi-occupancy buildings.

The HSE has recently confirmed its position in respect of PE risers. They have stated that:

1. GDNs have a mandatory duty to manage their network safely in accordance with their safety case under the Gas Safety (Management) Regulations (GS(M)R). One of the Safety Case requirements is to demonstrate that management arrangements are in place and are adequate to ensure that the relevant statutory provisions, such as the Pipelines Safety Regulations 1996 (PSR) will be complied with.
2. Regulation 5 of the Management of Health and Safety at Work etc Regulations 1999 (MHSW) requires every employer to have "…. such arrangements as are appropriate, having regard to the nature of his activities and the size of his undertaking, for the effective planning, organisation, control, monitoring and review of the preventive and protective measures. Where duty holders have proactively identified safety issues that need to be addressed by virtue of the processes in place to ensure compliance with their GSMR safety case or Regulation 5 of MHSR as outlined above, failure to act on those findings would not only constitute a breach of GSMR Reg 5 (duty to comply with their Safety Case) but also the relevant statutory provision (such as Regulation 13 of PSR). These actions can therefore be considered to be mandatory.

3. For PE risers where a risk assessment has identified that these are unsuitable (for example due to the risk of failure in a fire) then failure to address the issue constitutes a breach of PSR Regulation 8 (suitability of materials).

We have assessed our HRB PE riser population in the same way presented for MRB in our original submission. For HRB we are proposing an appropriately lower risk threshold given the consequence of failure. As a responsible asset owner, it is important we take steps that are reasonably practicable to remove the risk related to this asset group entirely. We have therefore set out risk threshold at 0 and propose to invest [redacted] to remove all 93 HRB PE Risers in the RIIO-GD3 period.

Incidents such as Grenfell highlight the risks of having combustible materials on the outside of multi occupancy buildings. Combustible materials have now been banned on external walls of multi-occupancy buildings of at least 18 metres. Cadent has reviewed its relatively small population of PE risers on high rise buildings against the risk these assets play in the propagation of fire and the high consequence impact. The scale of investment required ([redacted]) is such that, for a marginal investment over RIIO-3, we are able to remove entirely the specific risks associated with PE risers on high rise buildings, which is in line with prevailing public sentiment and risk appetite on this high consequence infrastructure.

Technical factors further reinforce this need. Existing mitigation measures, such as pipeline isolation valves and glass fibre reinforced plastic (GRP) sleeves, offer limited protection against the risks posed by fire. The materials currently in use, namely PE and GRP, have relatively low thresholds for heat resistance and fire ignition, making them inadequate in the event of an emergency. These technical limitations expose customers to unacceptable levels of risk in a relatively small volume of assets. Therefore, intervention becomes a matter of both compliance and responsibility and can be delivered for a relatively low cost.

Replacing all PE risers is reasonably practicable and will entirely remove the potential hazards, ensure long-term compliance, and maintain the trust of the communities we serve. In light of both the legislative mandates and technical realities, we believe that fully replacing these 93 assets is the most sensible course of action.

Conclusion

Our submission includes comprehensive asset-level data, pre- and post-intervention scores, and cost-benefit analysis, demonstrating that our proposals meet the threshold for non-mandatory repex under Ofgem's framework. We have taken a risk-based approach to our workloads in this area and believe that our plans are consistent with our duties and the expectations of our safety regulator and customers alike. We trust that the additional information we have provided will enable the Final Determination to support this critical workload to ensure a safe and resilient network for our customers.

GDQ6. Do you have any comments on the proposed design of the Tier 1 Mains Decommissioned PCD, including the position to retain the 3% cap on the upwards Allowance Adjustment Mechanism?

We support the Draft Determination decision to retain the design of the Tier 1 Mains PCD as it was for RIIO-2. Whilst we maintain the view that a slight increase to the Allowance Adjustment Mechanism could be of benefit when finalising packages of work at the end of the Iron Mains Risk Reduction Programme (i.e. to accelerate some work from RIIO-4 into RIIO-3), we do not see the retention of a 3% cap as creating an issue in our delivery of IMRRP by the end of 2032.

Whilst we agree with the design of the PCD, the setting of unit costs that ensure the deliverability of this work will be critical. Network-specific unit costs should be used, as they were during RIIO-2, to ensure that they reflect regional and company-specific factors adjusted for when comparatively assessing costs (to take account of impacts on our activities that raise costs, but which are ultimately outside of our control). For example, and most notably for our North London network to take account of labour cost pressures and the impacts of serving the densest operating area within the country. Further information on our views on these factors can be found in our response to GDQ36.

GDQ7. Do you have any comments on the proposed design of the Tier 1 Services PCD, including the position to retain the 10% cap on the upwards Allowance Adjustment Mechanism?

Given that Tier 1 Services workload is consequential of the Tier 1 Mains workload delivered, we retain the view we expressed in our SSMC response that a volume driver would be the most effective way to manage the allowances associated with this workload.

However, the use of a Price Control Deliverable does not introduce any material risks for customers or GDNs, so we support the continued use of the Tier 1 Services PCD in RIIO-3.

As mentioned above, our Tier 1 Services workload is consequential of our mains replacement activity. Service densities (the number of metallic service interventions required per km of mains replacement) fluctuate from scheme to scheme. As such, we support the Draft Determination decision to retain the 10% cap in the upwards Allowance Adjustment Mechanism and the use of no lower limit on adjustments to the baseline target workload.

As noted in our response to GDQ6 on the Tier 1 Mains Decommissioned PCD, the setting of unit costs that ensure the deliverability of this work will be critical. This equally applies to setting the unit cost for service interventions. Network-specific unit costs should be used, as they were during RIIO-2, to ensure that they reflect regional and company-specific factors adjusted for when comparatively assessing costs (to take account of impacts on our activities that raise costs, but which are ultimately outside of our control). For example, and most notably for our North London network to take account of labour cost pressures and the impacts of serving the densest operating area within the country. Further information on our views on these factors can be found in our response to GDQ36.

GDQ8. Do you agree with the proposed design of the Tier 1 Iron Stubs PCD?

We support the decision to remove the Tier 1 Iron Stubs re-opener. Whilst we would still advocate that a volume driver would be the most effective mechanism for RIIO-3, a PCD could work subject to including suitable measures to provide flexibility to GDNs and protections to customers. In summary, we propose that the PCD includes:

- Individual unit costs for (1) physical intervention on / remediation of the Stub, (2) risk assessment leading to the Stub being left in situ, and (3) Stub not found. This would recognise the different approaches across GDNs.
- A small Allowance Adjustment Mechanism, similar to that used across the Tier 1 Mains and Services PCDs, to enable GDNs to deliver additional interventions should they be required.

We consider these points in our response below as well providing the additional information requested in the Draft Determination.

Managing the Stub not found / Cadent Tier 1 Stub risk assessment process difference in the PCD

We have a different approach to Tier 1 Stub risk assessment (with a process agreed with the HSE) to other GDNs. This means that by the time we are undertaking follow-up investigations (on site assessment) we have a high level of confidence that a Stub will be found. Whilst it is possible that we may find instances of "Stub Not Found" over the remainder of RIIO-2 or during RIIO-3, particularly as volumes increase, we do not believe this is likely to be a material volume hence we have forecasted the volume of "stub Not Found" at 0.

At a high level, the process to identify the location of a Tier 1 Stub is to interrogate our core Geographical Information Systems (GIS) mapping system, ESRI, whilst undertaking a desktop assessment which involves analysing the Stub to establish a risk score. Any anomalies found would be addressed through the established mapping error process ('DR/4'), which is funded through existing baseline allowances. The desktop assessment includes checking if the (Tier 2 or 3) parent main is a pipe above a safety threshold (PAST), if the Stub connects to the parent main via a tee and if the Stub is Tier 1 iron. This provides the indication that the Stub exists, and we will then undertake follow-up investigations via an on-site assessment to determine if the Tier 1 Stub can be left in situ, as per the policy agreed with the HSE, or if it requires a physical intervention to decommission the Stub.

Given the different stubs identification processes across GDNs, as well as the need to set unit costs for physical interventions / remediations, unit costs are needed for both:

- 'Stub left in situ' following risk assessment.
- 'Stub not found'.

Our use of other techniques field

For Cadent data, as previously acknowledged to Ofgem, there is inconsistency between how we've used the "Other Techniques" field between our RIIO-2 Regulatory Reporting Pack (RRP) and RIIO-3 Business Plan Data Tables (BPDTs). For RRP years 1-4, we have included physical interventions such as ESEAL in the "Other Techniques" field. In comparison, we have included this technique in the 'Risk Managed - remote foam bagging' row for RIIO-3 BPDTs, as it shares many similarities. Given how we split out the costs in our re-opener application (i.e. physical intervention and left in-situ), we wanted to draw a line between the outcomes of physical intervention and the Stub being left in situ (following on-site assessment) in our RIIO-3 plan. We believe our approach to completing the RIIO-3 BPDTs is more optimal, and we have begun discussion with Ofgem's RIIO-2 RRP team to discuss restatement of our years 1-4 submissions and/or adjustments to the data table for year 5 RRP.

As such, we can confirm that we used the Other Techniques field in the BPDT solely for the outcome of Stubs being left in situ following on-site risk assessment.

Volumes that could be used on a consistent basis

[redacted]

Setting unit costs

As stated above, the PCD should include unit costs for (1) physical intervention on / remediation of the Stub, (2) risk assessment leading to the Stub being left in situ, and (3) Stub not found. This would recognise the different approaches across GDNs.

For physical interventions / remediations of the Stub, there are two options for setting unit costs in the PCD:

- Set a single 'blended' unit cost that incorporates all physical intervention types.
- Set a unit cost per physical intervention type (i.e. one for FBOS/ESEAL, one for cut outs)

The first option listed above has been used during the RIIO-2, however we believe that either approach could work for RIIO-3, with the first option incurring slightly more risk for customers and GDNs than the second. If Ofgem identify there is a material difference in cost between the physical intervention types then we would recommend that the second option, to set a unit cost per physical intervention type, is used.

The tables below provide a breakdown of total our costs and unit costs associated with each cost type. We have used the same methodology that was used in the RIIO-2 Stubs re-opener to derive cost estimates. When reviewing the costs for each of these intervention types we sought to drive further efficiency in our Stubs cost. We are confident we can deliver these stubs proactively and thus have reflected that we will deliver the majority of our Stubs volumes at the point we deliver their parent project.

[redacted]

Including an Allowance Adjustment Mechanism

We would propose that the Tier 1 Stubs PCD includes an Allowance Adjustment Mechanism that allows a small level of over-delivery across the period. This would be consistent with the approach taken for Tier 1 Mains and Tier 1 Services. We would propose a cap of between 3% and 5%.

This would be appropriate given there is some data uncertainty, as described earlier in this response, and also due to the potential increase in Stubs workload due to workload disallowances from other areas of GDN plans. In explanation of the latter point, the remaining Tier 1 iron Stubs are closely tied to our CBA mains replacement activity (ALIP) and the associated Tier 2 and 3 mains within it. We only need to intervene on a Tier 1 stub if we connect but do not replace its Tier 2 or 3 parent main. Our repex programme is designed holistically for maximum efficiency, eliminating unnecessary Stub work when both Tier 1 and related Tier 2 or 3 mains are replaced together. Therefore, any reduction of our ALIP intervention will increase our Stub intervention volume from our forecasts; for the DDs proposed volume of non-mandated CBA mains (231km, RIIO-2 volumes), this would create 2.65% more live Stubs.

GDQ9. Do you agree with our proposal to update the Emergency Response Time LO to prevent the downward reclassification of gas escapes?

It is not clear what outcome the Draft Determination is aiming to achieve with the introduction of a number of changes to Standard Special Condition D10 in respect of gas emergencies. However, the proposals appear disproportionate to any perceived risk that they are intended to resolve and may introduce additional risk to GDNs' effective response to gas emergencies.

The Draft Determination refers to GDN performance against the annual emergency standards within the 2022/23 period. However, the evidence demonstrates that, despite our best efforts, it was the unforecastable level of demand on our emergency services during December 2022 that meant that we missed the overall annual standard for two of our networks during the 2022/23 period.

The unforecastable level of demand was caused by a number of factors not related to our network, as well as customers not being able to reach their in-home gas maintenance service providers, so instead called the National Gas Emergency Service, which is available 24 hours a day, 7 days a week.

Since the incident, we have led an industry wide review of the root causes to try to ensure that such a situation doesn't arise again. This has resulted in actions, such as the 'Make the Right Call' campaign, which helps customers to identify who they need to contact depending on the type of gas emergency. We have also supported Ofgem in their introduction of further obligations on gas suppliers requiring increased out of hours availability for emergency situations.

We take our safety obligations extremely seriously and appreciate that some of our customers did not receive the level of service from us that they, and we, would expect during December 2022. However, we do not believe that the changes to D10 proposed within the Draft Determination would have helped customers. When undertaking the licence drafting, it is critical that it leads to proportionate actions and does not detract from the GDNs' primary objective which is timely response.

Any consideration of additional obligations in the emergency space must take into account: (1) existing measures already in place; (2) the need to prioritise the health and safety of all customers; (3) any potential unintended consequence of any changes.

Downward reclassification of gas escapes

Whilst the ability to reclassify gas escapes allows us to prioritise our most 'at-risk' jobs in busy periods, the volume of jobs that we reclassified downward in 2024/25 is very minimal (11 out of 205,894 P1 jobs or 0.005% across all our 4 networks).

This is also broadly the case across all GDNs, with <2% of jobs in 2024/25 downward classified based on what was captured on first call into the National Gas Emergency Services (NGES) and then subsequently reported in Regulatory Reporting Packs (RRPs).

Therefore, whilst we do not believe there is a safety or customer service issue to resolve, and the proposed approach is likely to be disproportionate to the risk, this introduction is unlikely to have a material negative (or positive) impact upon GDNs' response to emergencies.

Identification of consumers in Vulnerable Situations

We are supportive of measures that help customers in vulnerable situations but, in an emergency situation, our priority must and always will be to dispatch an engineer to investigate and prevent the escape or other gas emergency as soon as possible as in this situation by definition all customers are potentially vulnerable. We are concerned that any obligation to pro-actively identify all customers in a specific vulnerable situation during the emergency call, e.g. asking if they fall within any of the specified Priority Services Register (PSR) criteria or are otherwise in a vulnerable situation (which the

call handler will then have to assess) could delay our attendance at the emergency and also delay the call handler taking the next emergency call. It would also be subject to a customer's willingness to disclose this information about vulnerability (which may later become apparent upon attendance).

As operator of the National Gas Emergency Service (NGES), we already take reasonable and proportionate measures to identify customer vulnerability, without risking delays. Under our current processes, the following steps are taken to identify vulnerability during the call to the NGES:

- If a customer is already on the PSR, a PSR flag will the highlighted on the work order for the engineer.
- If a customer is not registered on the PSR but shares details of vulnerability on the call, then this is captured within the additional comments field and will flow through to the attending engineer.
- All NGES call handlers receive annual customer safeguarding and vulnerability training, which includes how to pro-actively identify vulnerability through needs code identifiers. Again, where such vulnerability is identified during the call, it will be notified to the attending engineer.
- All NGES call handlers make a final check with the customers if there is anything else that the engineers need to know when attending. Any relevant information is passed on to the attending engineer.

It is important to note that our emergency attendances are primarily prioritised according to whether it is a controlled or uncontrolled escape and when the call was received. This is because these are the most important factors from a health and safety perspective, and we are dealing with an emergency or potential emergency. Being identified as a vulnerable customer will not necessarily mean that you will be prioritised above other calls.

All of our emergency engineers also receive customer safeguarding and vulnerability training. As above, this training helps them to identify whether customers they are visiting should be on the PSR if they are not already, or whether they have a broader vulnerability that needs to be taken into account when responding to their gas emergency.

As set out above, we already have effective measures in place to identify vulnerable customers, whilst balancing our health and safety obligations and primary role to protect life and property.

In summary, we do not believe that the proposed change would deliver any further customer benefits but could introduce additional risk of delayed response. **Therefore, we would propose that Ofgem do not implement this change.**

We believe that further industry discussion is needed to fully understand the perceived issue that Ofgem are hoping to resolve with this proposal, and what they were envisaging GDNs would do, beyond current processes, with this information. For example, is the intention that there should be a higher priority classification beyond those currently in place for customers in vulnerable situations.

Requirement for detailed identification of each gas escape

We take our obligations in respect of emergency attendances very seriously and have measures in place to try to ensure that all customers are visited within the required one- or two-hour timeframe where an emergency has been reported. This includes investigating any circumstances where the ESOS prescribed timeframes has been missed, including identifying the root cause and any potential trends. While, as a diligent licensee, we see the value in this exercise, we cannot support the proposal for a detailed identification of each instance the prescribed timescale is not met without further information on what will be required and, crucially, whether the requirements would be proportionate and appropriately targeted and not impose an unreasonable regulatory reporting burden that doesn't effectively meet the intention of the change.

Before introducing this Licence Obligation, further industry discussion is needed to understand what Ofgem would define as "detailed identification". Once this is understood an impact assessment will be

required to ensure that if the Licence Obligation is introduced it does not drive any unintended consequences, such as increased “on-site” times leading to reduced productivity, increased failures, and increased risk to property and life.

Under our current processes we capture reason codes for all jobs where the prescribed time is not met. We then analyse this data, identifying trends and root causes to support the delivery of further improvements to our processes.

Most failures can occur in condensed unforecastable high workload / incident periods, so will have the same reason code. For example, in 2022/23 in our North West network more than half of all cases where the prescribed time was exceeded occurred within one week during an incident period in December 2022. As such, detailed individual reports for each case are likely to be duplicative and provide no further useful information.

Without understanding what is meant by “detailed identification”, we have concerns that this could add significant additional burden to GDNs in producing the information and to Ofgem in reviewing it. For example, in 2024/25 GDNs responded to almost 625,000 emergency calls. With all networks achieving the 97% annual standard, this could mean up to almost 19,000 cases where “detailed identification” is required to be provided and reviewed.

If significant information is required for each case, then to ensure its accuracy and completeness it would need to be captured near to, or even in, real time. This could require FCOs, Network Supervisors and members of the Dispatch team to be taken off core emergency activities for a period of time to capture this information. This could then impact the GDN’s ability to respond to the next emergency, could lead to further cases where the prescribed timescale is exceeded, and most importantly increase the risk to life and property.

As such, until there is further understanding of the definition of “detailed identification”, and a subsequent impact assessment has been undertaken, we are not in a position to be able to support the introduction of this Licence Obligation.

GDQ10. Do you agree with our proposed design of the ERTLO ODI-R?

We do not believe an ERTLO ODI-R is required as this will be reported through the annual Regulatory Reporting Pack.

Following the Sector Specific Methodology Consultation 'minded to' position to introduce additional reporting requirements for RIIO-3, all GDNs positively and proactively collaborated to implement monthly uncontrolled (P1) and controlled (P2) reporting within the Regulatory Reporting Pack (RRP) for the remainder of RIIO-2 (2024/25 and 2025/26).

The Draft Determination provides a more comprehensive view on the detailed reporting requirements that Ofgem intend to introduce for RIIO-3 alongside a requirement for GDNs to publish this data on their websites.

We support the introduction of this additional reporting and the requirement to publish this information on our website. However, whilst we do not have any objection to the metrics being included within an ODI-R, we do not believe that it is necessary to achieve the stated objectives.

All of the requirements, including to publish the metrics annually on websites, can be set out within the Regulatory Instructions and Guidance (RIGs). The use of an ODI-R would not place any further requirements, nor reputational incentive, upon GDNs. It is also within Ofgem's gift to include these metrics within their Annual Report, regardless of if they are within an ODI-R or not.

We note the Draft Determinations view that the aim is to obtain comparable data within RIIO-3. As such, further industry discussion would be welcomed in finalising these metrics and the associated reporting requirements, to be set out within the RIGs, to ensure consistency. For example, during a discussion at Ofgem's working group 13 November 2024, one GDN noted that they do not validate FCO arrival times using GPS technology unless the responding engineer asks them to.

GDQ11. Do you agree with our proposed design of the VCMA UIOLI mechanism?

We agree with the proposed design and value of the VCMA UIOLI mechanism. The design and proposals are broadly the same as RIIO-2 and this has in most cases worked well and provided an agile approach to using the funding and maximising reach to customers that need support.

The proposed level of funding will allow the continuation of key strategic projects across our networks and will continue to deliver benefits to our customers who are making tough decisions regarding fuel and food poverty.

There are still areas of the proposed design that would benefit from additional conversations and clarification which, whilst we understand the high-level rationale for the approach that Ofgem are taking, we cannot fully assess and comment on the proposals until we understand the requirements and their potential impact. The clarifications required are around potential changes to reporting metrics and governance and stakeholder input, as per below:

- **Greater transparency and accountability** – We need to understand exactly what this means and be confident that this approach will not hinder or slow down delivery of projects or signing agreements with partners. Being able to respond to changing needs quickly is a huge part of the success we have had in RIIO-2.
- **Increased stakeholder input** - We welcome any stakeholder input, and this is a positive move however as above, this should be designed in a way that does not build in unnecessary delays and bureaucracy.
- **Enhance the reporting of project and partner learning -** We will need to understand what the governance is around this point and once again need to ensure that this does not become an administrative burden for us or impacts delivery to our customers.
- **VCMA projects are more impactful and cost effective and aligned to cross sector approaches to addressing consumer vulnerability** - We would always ensure that the true benefit of any project is delivered to our customers that need support the most. The rules within the current governance process and the PEA documentation ensures that we maximise impact. We would not be supportive in setting a minimum or a maximum impact e.g. SROI as we feel this could encourage the wrong behaviours. An example of this would be focussing on mass campaigns, whilst these play a vital role in raising awareness they need to be targeted and appropriate. They generate massive SROI but don't tackle individual challenges and remove families from fuel poverty.
- **Annual report and showcase events** - We would welcome a review of these events as they are currently very administratively heavy, and we are not totally convinced that the events are targeted at the right audience and therefore are the use of customers' money. We would be supportive of consolidating annual reports into one (collaborative and individual) and look at the duration and audience of the annual showcase.

We are supportive of the introduction of certain activities moving into BAU and this is something that will allow us to maximise the VCMA impact on projects that will help tackle fuel poverty, whilst allowing proven projects to be delivered (broadly on carbon monoxide). We do however have concerns about whether the funding levels envisaged are being delivered for the BAU projects given the interaction with the comparative cost benchmarking approach.

Our priority must always be to provide services and support to customers that need it most across our networks. To do this, we must maximise the funding available to collaborate with partners, and as set out in our vulnerability plan, deliver even more support for less. We have real concerns that by not ring fencing the BAU allowance and having it in flow into the comparative benchmarking regression assessment, the result of this assessment may establish a benchmark cost that does not reflect differences in the scale of BAU services proposed (and unfairly penalise those networks with larger programme as there is no cost driver in the modelling to account for this). This will potentially impact the numbers of customers we can support. We propose that the BAU funding is excluded from the

comparative regression modelling and separately assessed. If the BAU fund is not ringfenced, the effect will be to create a catch-up efficiency challenge for 6 of the networks and hence impact the services they are proposing in their plans to match the efficiency challenge. It will also provide an incentive for networks to reduce their spend in this crucial area. We do not feel this was the intent of moving the services into BAU.

As most of the CO projects have moved into BAU we still welcome the opportunity to fund certain CO activities from the VCMA fund. An example of these CO activities is the CORA (CO research and analytics) platform which we have created to bring all CO data together for the benefit of the industry. We also continue to fund research and development projects on CO through the VCMA fund, these are vital to helping shape direction and strategy over the next price control.

There also needs to be further clarification on the treatment of projects that crossover between BAU and VCMA activities and how they are reported, costed or/and delivered.

GDQ12. Do you agree with our proposed design of the Customer Satisfaction ODI-F?

Summary

We support the design of the Customer Satisfaction ODI-F for the unplanned and planned interruptions surveys set out in the Draft Determinations.

However, further consideration is required in the design of the Connections survey element of the ODI-F ahead of Final Determinations in light of the removal of the Domestic Load Connection Allowance (DLCA) and the uncertain impact this will have on volumes of returns and the scores received.

Our proposals of further work on the Connections Customer Satisfaction ODI-F are set out below.

Work within the scope of the Connections survey will the removal of the DLCA impact

Customers who have received new gas connections and alterations to their existing gas connection receive Connections surveys under the Customer Satisfaction ODI-F. Customers requesting alterations to their existing gas connection do not receive a 'discount' to the price charged for this work under the DLCA. As such, it is only domestic customers requesting new gas connections that currently receive the benefit of the DLCA and would be impacted by its removal.

Setting targets and deadbands for Connections in light of the removal of the DLCA

The Sector Specific Methodology Decision (SSMD) acknowledged there could be changes in customer expectations due to the removal of the DLCA. We agree with this, and following SSMD publication GDNs worked collectively with Explain Market Research to test the potential change in customer sentiment due to the removal of the DLCA.

Whilst we recognise the weaknesses in the methodology used in providing an accurate quantified impact on scores, this was always going to be a challenge when testing this with customers who were questioned around both charging scenarios (i.e. with and without DLCA), versus the vast majority in RIIO-3 who will only know of the one charging arrangement (i.e. without DLCA). Indeed, this challenge was recognised in the SSMD which considered the effects of the removal as difficult to quantify.

The GDN work showed a reduction in scores across all GDNs from 9.55 to 6.06. As stated above, we recognise that this is unlikely to be an accurate quantification of the change in scores and believe that it is likely to exaggerate the impact of removal of the DLCA. However, we do believe it to be an accurate reflection of the direction of scores under a scenario where DLCA is removed and customers face higher charges. It also justifies the need for further quantification of, and measures to address, the impact beyond those included in the Draft Determinations.

This should be achieved by GDNs continuing to survey customers as usual when RIIO-3 begins, but we propose that the Final Determinations includes a review at the end of Year 1 to assess the impact with the ability to then re-calibrate the targets and deadbands if the evidence demonstrates that scores have been impacted by the removal of DLCA. This will ensure that GDNs do not receive a negative financial impact due to something that was outside of their control and not linked to the quality of experience they deliver. This review, and any changes to mitigate the impact, should only apply to the workload that is impacted (i.e. new domestic connections, not alterations).

We have ideas on how this could work in practice and would recommend further discussion at an Ofgem Gas Distribution Policy working group. Customer Satisfaction was due to be discussed at an Ofgem working group on 11th August but the session 'timed out', therefore we would suggest the scheduling of a further working group in September.

Setting a minimum connections workload and/or survey returns volume for the ODI-F to apply

We agree that connection volumes are likely to reduce during RIIO-3, particularly with the removal of the DLCA, and that this will likely impact the number of surveys returned from customers. We, therefore, support the need for a measure to ensure that a statistically robust level of responses is required for the financial incentive to apply. This will ensure the ODI-F remains credible.

Our evidence suggests that an annual response of between 200-250 surveys is required to ensure the scores are statistically robust. Therefore, we support the Draft Determination proposal to set this at 240.

However, we do not support the use of a secondary minimum workload threshold in addition to the minimum survey return threshold, and we believe there are different drivers for the use of each of them:

- The use of a minimum survey return threshold relates to the statistical robustness of the scores, and therefore the credibility of applying rewards or penalties to GDNs. We support this.
- The use of a minimum workload threshold relates to whether the experience of a volume of customers, in this case <1000 per year, is worthy of incentivisation. We believe it is (subject to statistical robustness) and therefore do not support the Draft Determination.

The financial incentivisation encourages us to deliver investments in our people, processes and systems that support improved quality of service for our customers. Whilst we acknowledge the Draft Determination view that if the number of customers benefiting from these improvements falls below a certain volume, then it does not justify all customers paying for them, there is wider context that should be considered. The new connections, alterations and disconnections processes have many similarities and utilise many of the same people, processes and systems. Whilst volumes across these three related services may be lower in the early parts of RIIO-3 at least, due to heat policy uncertainty, this will change for RIIO-4 and therefore continued incentivisation in RIIO-3 driving investment in quality of service would be beneficial for all current and future customers as it could be applied to any of the three services.

GDQ13. Do you agree with our proposed design of the Disconnections Customer Satisfaction ODI-R?

We support the introduction of a Disconnections Customer Satisfaction ODI-R for RIIO-3. Given that key policy decisions are likely to be made in the next couple of years as part of the disconnections framework review, there is too much uncertainty to introduce an ODI-F for RIIO-3.

The review has been initiated by the Gas Systems and Operations Unit within Ofgem and is likely to require input from multiple government and regulatory bodies (Ofgem, DESNZ, HSE & DWP), as well as other key industry stakeholders (GDN companies, IGTs, UIPs and energy suppliers). Please see our response to GDQ25 for a view on some of the potential policy decisions to be made through the disconnections framework review.

In shaping any disconnections customer satisfaction metric for RIIO-3, ideally there would already be decisions to these policy questions, as they will define the role that networks will play, and therefore what is required from a customer satisfaction survey in this space.

In the absence of these policy decisions, one area of challenge for the Disconnections Customer Satisfaction Survey ODI-R for RIIO-3, will be the effectiveness of surveying 'safety' disconnections customers, as who the survey is sent to, and who the requestor of the work is, are not always the same person. Indeed, the initial results from the disconnections pilot survey launched in April 2025, show that the response rate for a safety disconnection is much lower (7%) than for a paid-for voluntary disconnection (25%).

We support the requirement to publish customer satisfaction scores on our website, and we currently do this for the existing surveys on an annual basis in our RRP summary tables. We support expanding this to include the Disconnections ODI-R scores.

GDQ14 Do you agree with our proposed design of the PSR Customer Satisfaction ODI-R?

We support the Draft Determination to introduce a PSR Customer Satisfaction ODI-R, with targets set at the same level as the ODI-F. We also support the requirement to report PSR Customer Satisfaction scores within annual Consumer Vulnerability Reports and defining the requirement within the VCMA Governance Document.

We support this focus on customers in vulnerable situations and would welcome Ofgem support in evolving industry processes to provide GDNs with better visibility of customer contact data from PSR 'sign-ups'. Currently, there is no obligation on Suppliers to provide the phone contact alongside the registration address and need code. Retail Energy Code (REC) only stipulates that a Supplier must maintain a Priority Services Register and to share PSR data via a relevant industry mechanism. The Supplier Licence states that Suppliers must "share the Minimum Details using the Relevant Industry Mechanisms". This lack of information limits GDNs from being able to offer the bespoke and tailored service that PSR customers require. The capture of contact data in the customer PSR sign-up process would enable the provision of these more bespoke and tailored services. As such, we request that Ofgem support GDNs in addressing this issue. In the first instance we would welcome this being added to the agenda for the next Ofgem Gas Distribution Policy working group.

GDQ15 Do you agree with our proposed design of the Complaints Metric ODI-F?

We support the continuation of the Complaints ODI-F incentive in RIIO-3 and it remaining as penalty only. However, we do not support the need for resetting the Minimum Performance Level (MPL) within this ODI-F for RIIO-3.

During RIIO-2, GDNs have performed well in handling customer complaints and have consistently achieved better performance than that required by the current MPL (5). However, whilst scores have been better than the MPL this does not mean that it should be reset. It must be recognised that this is a minimum standard and already represents an acceptable (or in reality good) level of performance. Therefore, it should not be the intention to continually ratchet minimum standards.

It is also not proportionate for Ofgem to intervene when GDNs are already performing well both on the complaints handling metric and also delivering year on year improvements in customer satisfaction scores. It is duplicative when GDNs already have other incentives within the framework to improve their performance in this area (i.e. Customer Satisfaction, GSOP14, Totex Incentive Mechanism).

Therefore, we would propose that the MPL for RIIO-3 is kept as the same level as RIIO-2.

GDQ16 Do you agree with our proposed design of the PSR Customer Complaints ODI-R?

We support the Draft Determination to introduce a PSR Customer Complaints ODI-R, with Minimum Performance Levels set at the same level as the ODI-F. We also support the requirement to report PSR Customer Complaints scores within annual Consumer Vulnerability Reports and defining the requirement within the VCMA Governance Document.

GDQ17 Do you have any views on the proposed approach to setting unplanned interruption targets for both non-MOBs and MOBs through the Unplanned Interruptions ODI-F?

We do not support a number of areas of the Draft Determinations in relation to setting the unplanned interruption Minimum Performance Levels (MPLs) and Excessive Deterioration Levels (EDLs) for both non-MOBs and MOBs. Specifically, we do not agree with:

1. The use of a common non-MOB MPL or EDL, which would discriminate against our London network. We instead maintain that the policy intent and evidence available supports the continued use of network-specific MPLs. And that the network-specific non-MOB MPLs provided in our business plan provide the appropriate balance between ambition and deliverability.
2. The amendment to the MOB MPLs and EDLs set out in our business plan for our East of England and West Midlands networks. We instead maintain that the policy intent and evidence available supports that the MOB MPLs proposed in our business plan provide the appropriate balance between ambition and deliverability.

In arriving at these MPL proposals the Draft Determinations do not reflect the clear evidence of:

- Ofgem's stated policy intent when introducing the Unplanned Interruptions incentive.
- The impact of regional factors, most notably the material impact of complex non-MOBs, upon non-MOB unplanned interruption durations.
- The full datasets that are available to support setting MOB MPLs.

We discuss and highlight the key evidence to each of these in the detailed sections of our response below.

Whilst we do not support the two key areas highlighted above, we do agree with the following elements of the Draft Determinations:

- The penalty cap being set at -0.17% RoRE, which is broadly aligned with the value of the incentive in RIIO-2.
- The penalty cap being divided equally between MOBs and non-MOBs. This is a continuation of the approach used for us in RIIO-2 and appropriately balances the larger volume of non-MOB unplanned interruptions with the greater customer impact of MOB interruptions.
- The acceptance of the MOB MPLs and EDLs set out in our business plan for our London and North West networks. Whilst a reduction in MPL is not required by the policy intent of this incentive, our proposals find the right balance between demonstrating ambition and deliverability.

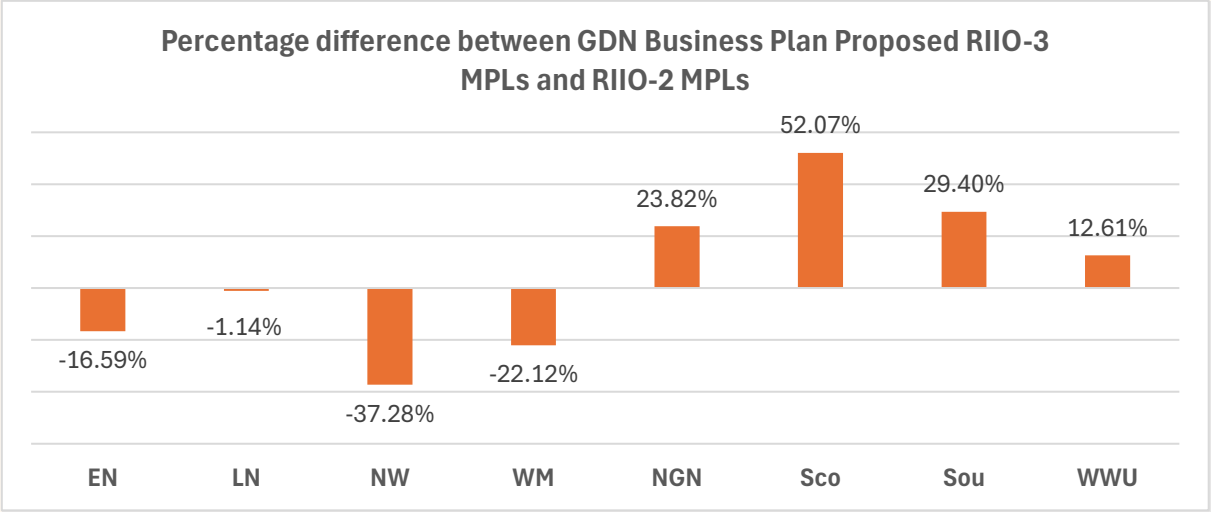
Purpose of the unplanned interruptions incentive and what is being proposed

The unplanned interruptions incentive was implemented to ensure that there was no deterioration from the 'acceptable' performance levels seen in RIIO-1. As stated at the RIIO-2 Draft Determinations "*We reviewed GDN performance in RIIO-GD1 and, excepting North London, do not consider that any networks have breached minimum performance levels. It follows that if network companies maintain their current performance, they should not expect to receive a penalty*"[4]. When designing the penalty-only incentive, it was recognised that the purpose of the Minimum Performance Level was to *"represent the point at which there is sufficient deterioration in performance that a penalty should be applied. Companies should therefore be aiming to comfortably exceed these levels in order to avoid any risk of penalty".*

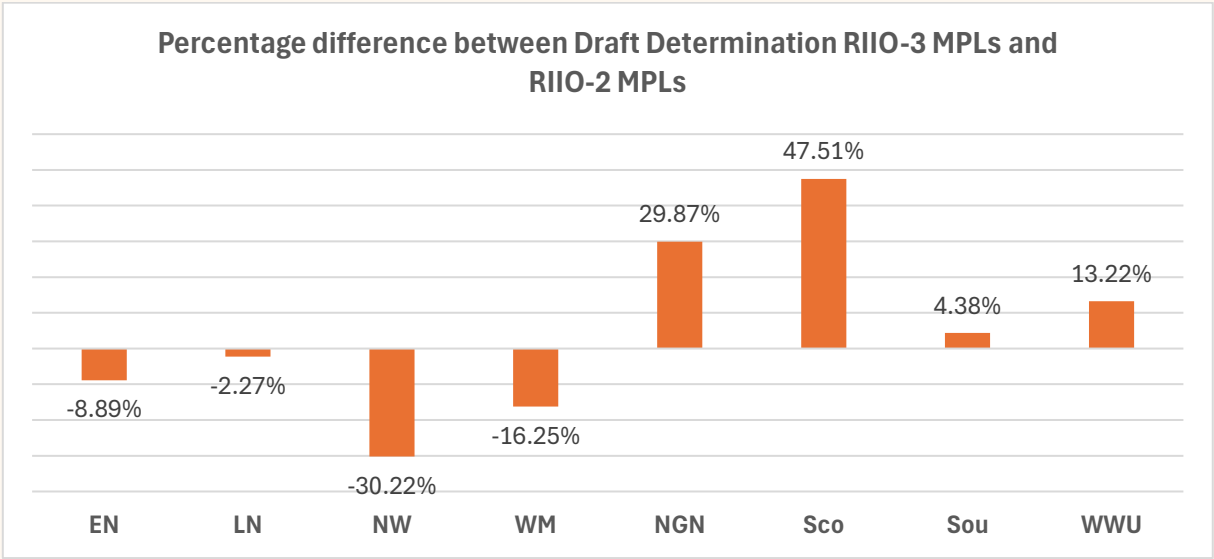
Across RIIO-2, we have consistently performed better than the Minimum Performance Levels, with no deterioration from the standards in place in all of our networks. For RIIO-3, our proposals of improved standards beyond the RIIO-2 minimum performance levels were voluntary to show ambition and to seek a better outcome for customers, while balancing this with confidence in deliverability. Conversely,

[4] https://www.ofgem.gov.uk/sites/default/files/docs/2020/07/draft_determinations_-_gd_sector_0.pdf para 2.85

it appears that other GDNs have proposed, in their Business Plans, MPLs that would allow deterioration from RIIO-1 levels, as shown in the graph below[5].



Whilst the Draft Determinations vary to Business Plan submissions, at a summary level they continue to propose increased stretch of MPLs for Cadent, whilst allowing deterioration from RIIO-1 acceptable levels for all other networks – as shown in the graph below.



It is important to recognise that the levels in place are minimum standards and not targets, so companies should be aiming to comfortably exceed these levels in order to avoid any risk of penalty, as recognised at RIIO-2 business planning. At RIIO-2 Final Determinations, Ofgem draw reference to the fact that *"WWU and NGN argued that they had delivered frontier performance in unplanned interruptions duration, and that other networks should be expected to catch up".* Ofgem responded to this by asserting that *"We disagree. The objective of this ODI has been long established as ensuring that minimum standards are not breached, and by definition Minimum Performance Levels are not stretching"*[6]. Likewise, in response to our RIIO-2 business plan proposal to deliver improvements in average durations beyond the MPLs over the course of RIIO-2, Ofgem commended the proposal but did not think it was necessary to incorporate into a reputational ODI.

[5] To enable comparability between GDNs and between price control periods we have needed to calculate implied combined MPLs for Cadent in RIIO-2 and all GDNs in RIIO-3. This is due to the other GDNs having combined MPLs in RIIO-2 and RIIO-1 regulatory reporting being incomplete for some networks. The methodology for this calculation was provided to Ofgem in a PDF sent on 11th April 2025.

[6] https://www.ofgem.gov.uk/sites/default/files/docs/2021/02/final_determinations_-_gd_annex_revised.pdf para 2.85

1. Non-MOBS Unplanned Interruptions targets

We do not support the introduction of a common non-MOBs MPL and do not consider it appropriate to set a minimum standard that "reflects the collective performance of the GDNs". This approach does not take account of the evidence available that demonstrates the impact of regional factors and reporting inconsistencies on unplanned interruption durations. As such, this approach would discriminate against our London network, where a greater impact can be seen from these regional factors and reporting inconsistencies.

Evidencing material variance in reported performance across GDNs

The data provided in GDN Regulatory Reporting Packs (RRPs) does not support the Draft Determination conclusion that there is a "relatively small spread of performance" across the sector. The data gathered during RIIO-2 to date demonstrates a significant spread with the lowest recorded duration being NGN, recording an average duration of 4 hours in 2023/24, compared to the highest duration being SGN - Southern at 23 hours, a statistically significant 564% variance.

RIIO2 Performance Spread:

Non-MOBs	Av. Duration	GDN	Year
Lowest GDN Duration	4	NGN	**2023/24**
Highest GDN Duration	23	Sou	**2023/24**
Performance Spread	564%		

Even when only assessing the spread of "acceptable" performance[7][8] there is still a significant variance of over 350% between the lowest and highest reported average durations.

When removing penalty years:

Non-MOBs	Av. Duration	GDN	Year
Lowest GDN Duration	4	NGN	**2023/24**
Highest GDN Duration	15	Sou	**2023/24**
Performance Spread	363%		

We operate four networks across very different areas of Great Britain, and, whilst not quite as material as shown above, there is still material variance in the average durations reported across our networks. We do not operate at different performance levels across our networks, with best practice being shared consistently across all regions. As such, we are well placed to understand and evidence that the material variance seen is due to regional factors.

Evidencing regional factors that impact average durations

The evidence does not support the Draft Determination claim that "*non-MOB unplanned interruptions work (is believed) to be broadly similar across the GDNs"* and it appears the evidence we provided on the specific regional differences has not been taken into account.

As explained in our business plan submission, in our London network, we have a large number of complex non-MOB buildings which skew our annual average restoration. The characteristics of these buildings, and complexity of supply restoration activities, have far more in common with MOBs than standard non-MOBs (for example single occupancy terraced, semi-detached, detached properties).

[7] By removing any years where a GDN received a penalty – i.e. breached the "acceptable" levels from RIIO-1 as determined by Ofgem in the RIIO-2 Final Determinations

[8] Note: The Draft Determinations criticised Cadent's exclusion of data when considering RIIO-2 reported performance to date. However, we only removed data where the GDN received a penalty therefore breaching the "acceptable" performance levels from RIIO-1 as determined by Ofgem in the RIIO-2 Final Determinations. This was the same approach that Ofgem used in setting the RIIO-2 MPLs.

In NGN's business plan they note that there are factors that could delay supply restoration in MOBs including "obtaining local planning permission (26 weeks), erecting scaffolding (12 weeks)"[9]. These factors are also present for complex non-MOBs in London where there is a population of similar buildings to those classified as MOBs except they don't meet the definition, for example tall buildings where all premises on the third floor or above are supplied through individual pipes rather than risers (but could still require local authority permissions and scaffolding). Below we have included a case study which includes a definition of what a complex non-MOB is as well as one example of where the specific factors associated with complex non-MOBs led to an extended supply interruption.

Case study:

Definition - what is a complex non-MOB
We define a complex non-MOB as a building with 3 or more meter points which does not meet the licence definition of a MOB, or a building with 2 supplies which is listed or in a conservation zone.

Example – [redacted]
Date Gas Disconnected 06/08/22, Date Gas Restored 14/12/22

This is a 3-storey Grade 2 listed building that includes a shop (at the basement and ground level) and 2 domestic flats (above the shop). The shop did not use gas, so only the 2 flats above were interrupted.

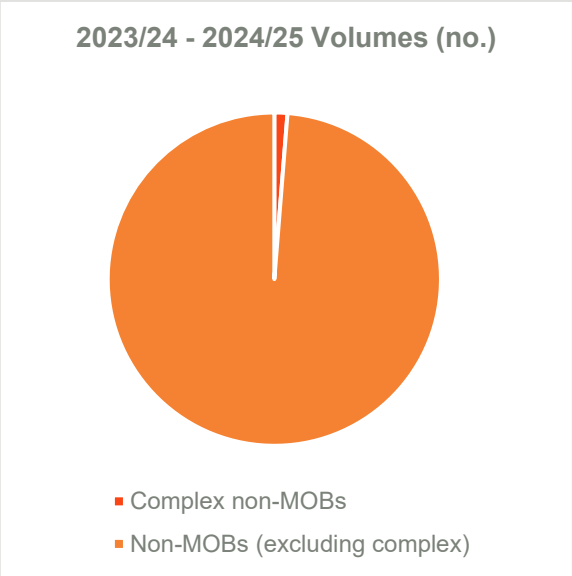
The total interruption duration spans over 4 months, this was due to a number of factors including:

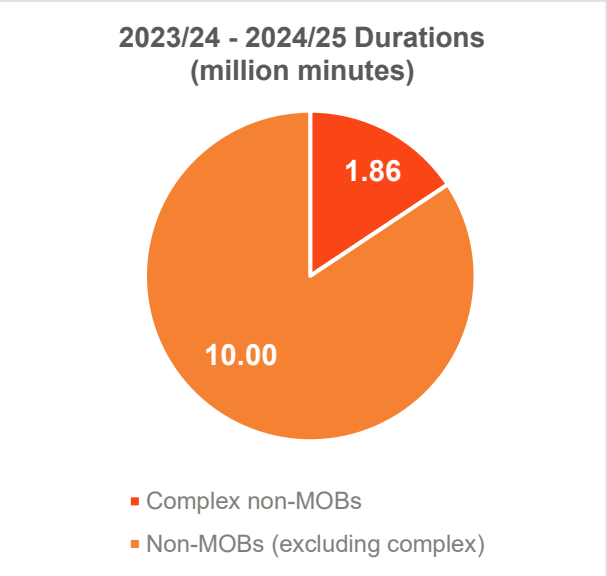
- There were no options for a 'cut and test' (if the existing network is deemed suitable it can be lined with a substance, tested and reused) due to G/5 compliance with ventilation and location requirements, so a rebuild was the only available option.
- Pre-construction survey was required to be undertaken to determine compliant replacement options.
- Extensive engagement with Land and Planning at [redacted] council and Dalcour Maclaren (the 3rd party company used to support the land and planning process).
- The building owner was not willing to proceed or provide any building permission until they appointed their own technical expert to advise on process.
- Due to being Grade 2 listed status, any changes had to be presented to [redacted] council and Dalcour Maclaren for their recommendations. There were 5 Design revisions that had to be made to accommodate this.
- Due to Grade 2 listed status, the replacement work required extensive inground work to the rear of the property and also included a more complex scaffold build.

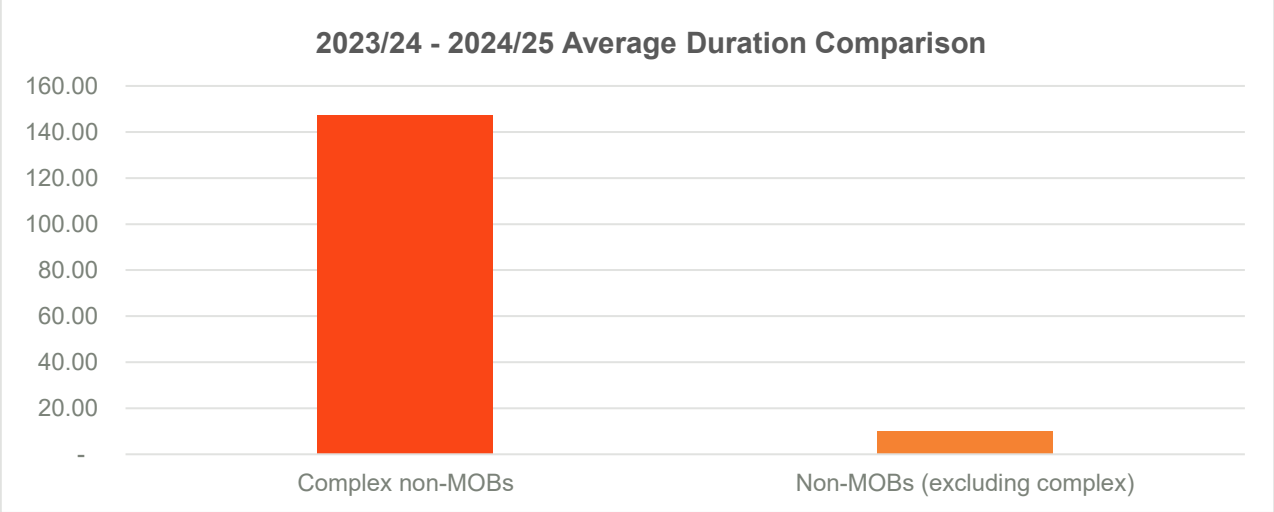
[9] https://www.northerngasnetworks.co.uk/wp-content/uploads/2024/12/NGN-RIIO-GD3-OFGEM-SUBMISSION-REDACTED-2.pdf page 24

In 2024/25 there were 144 interruptions on complex non-MOBs in London, with an average duration of 128.5 hours. If these interruptions were excluded from the non-MOBs dataset, the reported average duration would have been around 10 hours, rather than 12.3 hours. In 2023/24, while we saw a smaller number of these complex non-MOB interruptions (66), the average duration was much higher at 189 hours.

The graphs below show that whilst complex non-MOBs only make up a very small slither of the total volume of non-MOB unplanned interruptions, they make up a significant chunk of the total duration minutes and their average duration towers over that of other non-MOB interruptions.







Whilst we have not breached the proposed common 13-hour MPL in RIIO-2 to date, it would be possible to maintain the average durations experienced by complex non-MOB and other non-MOB customers respectively in 2024/25 and breach the proposed MPL, thus receiving a penalty, in RIIO-3.

Due to the significant differences in the average durations between these different building types, if the volume split between them changed whilst maintaining the individual average durations, the overall reported average duration would change. So, if we experienced a year with higher volumes of complex non-MOB interruptions and lower volumes of other non-MOB we could receive a penalty – even if the average durations for complex non-MOBs and other non-MOBs remained at 128.5 hours and 10 hours respectively.

As such, in our business plan, we proposed a set of network-specific non-MOB MPLs, which reflected the impact of regional factors including that of complex non-MOBs. The MPL proposals across our networks, balanced our desire to (voluntarily) show ambition with the need for deliverability, including ensuring there is sufficient headroom to account for factors such as changes in interruption volumes.

Inconsistency of data quality across networks

Given that there are known issues and inconsistencies with GDN reported unplanned interruptions data, it would be an error to use all companies' data to set a common MPL. One company's revenue could be at risk due to inconsistency in reporting of other companies.

We have raised concerns over data inconsistency throughout the RIIO-3 process, including in our RIIO-3 business plan data table commentary, however the Draft Determination does not take account of this. We have also, for the last 3 years, requested and proposed amendments to the Regulatory Instructions and Guidance in relation to Unplanned Interruptions to improve the consistency of reporting. Whilst these reporting inconsistencies have been recognised by the Ofgem Regulatory Reporting team, they have stated an intention to resolve them for RIIO-3, so they have not yet been addressed.

Likewise, in an Ofgem working group on 11th August 2025, Ofgem noted that they used a dataset for setting MOB MPLs that only goes back to 2019/20 because the reporting of the other GDNs was considered "patchy" before this. It was noted by Ofgem that the data provided by Cadent was more complete.

In NGN's business plan they also note that as London has "a larger (MOB) dataset (it) provides a more reliable basis for assessment"[10] and hence they proposed to use this dataset to set their MOB MPL. It would also be the case that London has a larger dataset for complex non-MOBs, within their non-MOB reporting, so it would also provide a more reliable view of the impact of these buildings.

Given the inconsistencies identified, Ofgem's lower confidence in other GDN historic data, and the identification that London data related to MOBs (and therefore likely complex non-MOBs) is more reliable, it would introduce significant risk of unjustified detriment to consumers and companies to introduce a common MPL that draws upon unplanned interruptions data from all GDNs.

Resulting misalignment between Draft Determinations and policy intent

As referenced in the previous section of this response, the use of a common MPL would allow for deterioration from RIIO-1 acceptable levels for some GDNs and requires stretch in MPL for others. This is despite the RIIO-2 MPLs being set at levels that Ofgem deemed were satisfactory performance and is misaligned to the stated policy position that the incentive was introduced for the purpose of *"protecting consumers by ensuring that GDNs' performance on the duration of unplanned interruptions does not deteriorate"*.

How to mitigate identified issues in Final Determinations

There are two main options to address the issues identified in the Draft Determinations, as discussed at an Ofgem working group on 11th August 2025:

1. Re-draft the definition of a MOB, in sole reference to unplanned interruptions, to include complex non-MOBs. This would have the effect of removing these interruptions, associated with complex non-MOBs, from the non-MOBs reporting measure and therefore from skewing the reported average durations in London.
2. Use network-specific non-MOB MPLs in RIIO-3. This would remove the negative impact of all regional factors when setting the MPL.

Whilst option 1 could potentially work, it would take time to implement as currently only the London network specifically tracks the unplanned interruption durations relating to complex non-MOBs. As such, all other networks would need to introduce processes, and potentially systems, to enable them

[10] https://www.northerngasnetworks.co.uk/wp-content/uploads/2024/12/NGN-RIIO-GD3-OFGEM-SUBMISSION-REDACTED-2.pdf, page 23

to also do this. Given that RIIO-3 is due to start in less than 8 months, this may not provide sufficient time to introduce these changes.

Option 1, if it still included using a common MPL, would still also be impacted, albeit to a much lesser extent, by other regional factors such as permissions and the prevalence of streetworks schemes. As such, it is still likely to allow deterioration from RIIO-1 levels for some GDNs and/or require improvements from acceptable RIIO-1 levels for others. As such, under option 1 we would still advocate the use of network-specific MPLs.

As such, we maintain that the use of option 2, network-specific MPLs, is most clearly aligned to the stated policy intent for the introduction of the Unplanned Interruptions incentive as well as best mitigating the impact of regional factors that could discriminate against some networks, most notably our London network.

2. MOBS Unplanned interruptions targets

We do not support the proposed adjustments made to the MOB MPLs in East of England and West Midlands and do not believe that the overall methodology used in setting the MOB MPLs is logical or justified.

How did we develop the MPLs in our business plan

As recognised in our RIIO-2 MPLs, and also recognised in the RIIO-3 SSMD, there are specific regional factors that lead to a wide-variance in reported MOB average durations. These factors include the varying number of MOBs by network, the height of the risers within a network's portfolio and varying levels of permissions (for example due to listed building status) required across different regions.

In our RIIO-3 business plan, rather than maintaining our RIIO-2 MPLs, which were based on RIIO-1 performance that Ofgem deemed acceptable, we voluntarily proposed more ambitious MOB MPLs. Whilst ambitious, these MPLs reflected historical performance and considered the significant regional differences, including the riser distribution across our networks.

The diagram below shows the range of options that we considered in proposing our MOBs MPLs for RIIO-3. We opted for half-way between our RIIO-2 MPLs and the longest average duration reported in the first three years of RIIO-2 as this found the optimal balance between showing ambition (although not required by the policy intent) and ensuring deliverability – which is a business plan assessment criterion.

MOB (hrs)	RIIO-2 MPL	1/4	1/2	3/4	RIIO-2 longest annual	RIIO-2 middle annual	RIIO-2 shortest annual
EN	518	485.8	453.7	421.5	389.3	290.2	105.9
LN	601	596.6	592.1	587.7	583.2	520.2	435.6
NW	601	471.4	341.9	212.3	82.7	81.1	55.1
WM	601	533.5	466.1	398.6	331.1	101.1	93.9

Range considered | Not considered

The levels proposed whilst ambitious, as recognised in the Draft Determination BPI Stage C assessment, included sufficient headroom to account for unforecastable events which could skew overall performance. This is aligned with the Ofgem's stated policy intent when introducing the Unplanned Interruptions incentive.

Network	RIIO-3 Business Plan Proposed MPL	RIIO-2 MPL	Percentage Improvement
EoE	454	518	12.36%
NL	593	601	1.33%
NW	342	601	43.09%
WM	467	601	22.30%

Ofgem approach to setting MPLs

The Draft Determinations state, for our East of England and West Midlands networks, "*we do not consider performance should be lower than what has been achieved in RIIO-GD2"*. However, we disagree with this statement for the following reasons:

1. This approach is not aligned with the stated policy intent of the Unplanned Interruptions incentive, as it enforces improvement beyond acceptable performance levels. This is highlighted further earlier in this response.
2. It contradicts the position Ofgem have taken with other GDNs.
3. This does not recognise the need for headroom to account for high impact events that occurred in RIIO-1 and could in RIIO-3 but have not been seen in RIIO-2 to date.
4. The dataset range utilised by Ofgem was limited due to a lack of confidence in other GDNs data prior to 2019/20. But extending the range would have supported the use of the MPLs we have proposed.

[**2**] The Draft Determinations for NGN and WWU state "*basing targets on their RIIO-GD2 data could leave them vulnerable to significant performance swings from a single large incident"*. As such, Ofgem has proposed MPLs for these GDNs that are many times higher than they have reported during RIIO-2 to date. It also contributes to a potential overall deterioration of MPLs, and therefore performance from RIIO-1 acceptable levels, for these networks of 30% and 13% respectively, as shown earlier in this response.

[**3**] Whilst neither of our East of England or West Midlands networks have exceeded the MPLs proposed in the Draft Determinations at any point during RIIO-2 to date, they do also remain vulnerable to single large incidents leading to significant swings in performance.

They are particularly vulnerable to the impact of responding to challenging high-rise (6-9 floors) or high-risk (10+ floors) riser unplanned interruptions. As shown in the table below, East of England and West Midlands have the third and fourth highest reported volume of high-rise and high-risk risers across the GDNs. This is particularly notable for West Midlands as this is a small network (including second lowest number of customers).

	Riser Numbers (RRP 24/25)							
	EN	**LN**	**NW**	**WM**	**NGN**	**Sco**	**Sou**	**WWU**
Medium rise (3 - 5 floors)	18,426	45,731	10,402	7,527	865	9,133	16,712	6,907
High rise (6 - 9 floors)	775	14,428	138	629	360	531	3,687	291
High risk (10+ floors)	334	3,872	206	533	173	234	1,118	159
Total	19,535	64,031	10,746	8,689	1,398	9,898	21,517	7,357

We operate four of the five largest riser populations by customer base across GDNs. The table below shows the proportion of risers per 100 customers in each network. Cadent networks, apart from London are relatively similar with the total riser population accounting for around 0.5 risers per 100 customers. This is significantly higher than NGN and WWU, who have around 0.05 risers per 100 customers and 0.27 risers per 100 customers respectively.

	Risers per 100 customers (RRP 24/25)							
	EN	**LN**	**NW**	**WM**	**NGN**	**Sco**	**Sou**	**WWU**
Medium rise (3 - 5 floors)	0.46	2.01	0.38	0.38	0.03	0.49	0.40	0.27
High rise (6 - 9 floors)	0.02	0.63	0.01	0.03	0.01	0.03	0.09	0.01
High risk (10+ floors)	0.01	0.17	0.01	0.03	0.01	0.01	0.03	0.01
Total	0.48	2.81	0.40	0.44	0.05	0.53	0.52	0.29

During RIIO-2 East of England and West Midlands have only experienced a limited number of unplanned interruptions related to complex high-rise or high-risk MOBs. However, interruptions in the challenging buildings, requiring more complex actions, take much longer to rectify and would impact the overall average duration reported. Both networks experienced higher average durations for MOBs during RIIO-1, where they needed to deliver a number of complex reactive interventions on their high-risk risers, which took longer to restore supplies.

[**4**] As stated above, whilst neither of our East of England or West Midlands networks have exceeded the MPLs proposed in the Draft Determinations at any point during RIIO-2 to date, if a wider dataset is examined there are cases where they have experienced unplanned interruptions on more complex high-rise and high-risk MOBs that have led to higher annual average durations.

Whilst the Draft Determinations state that Ofgem have reviewed back beyond the beginning of RIIO-2 to 2019/20, this is insufficient to identify the impacts of these complex interruptions on annual average durations.

In East of England if data from 2017/18 and 2018/19 is considered it shows annual average durations of 432 hours and 409 hours. So, within one hour of the proposed MPL in 2018/19 and 22 hours above the proposed MPL in 2017/18. In West Midlands if data back to 2017/18 is considered it shows an annual duration in excess of 50% higher than the proposed MPL.

Whilst we have delivered significant process improvements relating to the management of MOBs unplanned interruptions since RIIO-1, this use of a wider dataset provides evidence that the proposed RIIO-3 MPLs do not provide sufficient headroom and are potentially undeliverable every year over a longer timeframe.

In an Ofgem working group on 11th August 2025, Ofgem noted that they used a dataset for setting MOB MPLs that only goes back to 2019/20 because the reporting of the other GDNs was considered “patchy” before this. However, it was noted by Ofgem that the data provided by Cadent was more complete.

We do not consider it justified or reasonable to exclude data that would further evidence the MPLs proposed within our business plan because of concerns with other companies’ data, when our data is recognised as robust.

In addition to the position identified in point 2 above, where two GDNs have had MPLs proposed well in excess of their reported performance due to a lack of data, it will be important to ensure that companies do not receive more favourably outcomes for providing less reliable reporting, as this could create perverse incentives. Or conversely that companies who have provided more reliable reporting receive less favourable outcomes due to lower confidence in others’ data.

How to mitigate identified issues in Final Determinations

The evidence above demonstrates that the Final Determination should allow the ambitious but deliverable MOB MPLs proposed within our business plan for East of England and West Midlands.

This approach would provide sufficient headroom to account for high impact events that could leave these networks vulnerable to significant year-to-year performance swings, whilst remaining ambitious.

GDQ18 Do you have any views on the proposed expansion of the Collaborative Streetworks ODI-F across GB?

We support the Draft Determination to expand the Collaborative Streetworks ODI-F to all areas where an approved Central Coordinator is in place.

We have seen material benefits delivered to customers and society form the operation of the incentive in our Greater London area and we have been working with other regional stakeholders to test interest and commitment to expanding the incentive further. We welcome the Draft Determination to implement this expansion.

Ahead of business plan submission, we conducted customer insight research to understand the drivers and wants of our customers. When surveyed, 67% of customers had experienced Streetworks related disruption in the last six months and 4 in 5 respondents agreed that companies should invest more in collaboration to reduce this. When asked directly, over 70% of domestic customers support the expansion - with the greatest support being outside of London.

We have also engaged with a wide range of streetworks stakeholders through webinars and learning sessions supported by the Greater London Authority (who has been the central coordinator for the existing incentive scheme). We saw strong support for the expansion, due to the recognised social value and benefits it delivers, along with expressions of interest in becoming Central Coordinators which were sent direct to Ofgem and provided via the call for evidence.

We support the criteria Ofgem have outlined for identifying a suitable Central Coordinators along with the proposal to develop a guidance document that enables the mechanistic “onboarding” of new Central Coordinators throughout the RIIO-3 period. We are committed to supporting Ofgem in the development of this guidance document and cost reporting requirements over the coming year.

We are set to see an increase in Government ambitions to expand Streetworks schemes, particularly lane rental, throughout RIIO-3 and by Ofgem allowing flexibility of the incentive, it will enable new regional stakeholders to become Central Coordinators when such schemes are rolled out in their areas.

We are, however, perplexed by the penalty that has been applied to us in the Stage C of the Quality Assessment for the Business Plan Incentive.

In the RIIO-3 SSMD Ofgem identified the challenge that they “have not been able to clearly identify any third parties who are willing, able and suitable to deliver this role (as Central Coordinator) outside of Greater London.”11 As such, we held a webinar, supported by GLA, with over 70 relevant stakeholders to increase their knowledge of Collaborative Streetworks, the role of a Central Coordinator and of the RIIO incentive mechanism. We encouraged these stakeholders that if they felt they were willing, able and suitable to deliver the Central Coordinators role then they should express their interest to Ofgem, which they did directly and via the RIIO-3 Call for Evidence. We believe we supported Ofgem in addressing a challenge they had identified, and that we should not be penalised for doing so.

We also did not include any proposals on how the Collaborative Streetworks incentive should work in RIIO-3 in our business plan, as the RIIO-3 SSMD made some of these decisions already and was explicit that Ofgem intended to engage with stakeholders on the remaining elements ahead of Draft Determinations[12]

Please see our response to question reference CADQ11 for further details.

[11] https://www.ofgem.gov.uk/sites/default/files/2024-07/RIIO-3_SSMD_GD_Annex.pdf paragraph 4.180
[12] https://www.ofgem.gov.uk/sites/default/files/2024-07/RIIO-3_SSMD_GD_Annex.pdf paragraphs 4.179 and 4.186

GDQ19 "Do you have any views on the proposed minimum threshold, the methodology used to set it, and the incentive reward rate for the Collaborative Streetworks ODI-F?"

We support the expansion of the Collaborative Streetworks incentive to all areas where an approved Central Coordinator is in place. This will deliver significant benefits to a wider number of the communities that we serve.

In response to the Draft Determination in relation to the Collaborative Streetworks ODI-F, we:

- Support the use of a minimum threshold; however, we propose this should be set for each network based on the number of incentive qualifying projects delivered in that network for RIIO-2 rather than the methodology set out in the Draft Determination to set it.
- Support the incentive rates set out in the Draft Determination; however, the intent of these Determinations has not been implemented within the associated licence drafting consultation published on 30th July 2025.

Minimum Threshold

We support the introduction of a minimum threshold, however the methodology set out in the Draft Determination to set it would create a barrier to the expansion of Collaborative Streetworks, and the associated benefits, to new areas.

GDNs will need to embed new skills / dedicated resource, processes and potentially systems, as well as investing significant time in additional stakeholder engagement to enable them to effectively collaborate with other parties in minimising the impact of streetworks. We have seen that this can take time, and incurs cost, and it would be unlikely that an annual minimum threshold of 5 projects would be exceeded for some time following expansion.

Therefore, the use of the proposed minimum threshold would mean that GDNs would run the risk of investing in these activities without receiving any reward. This skewed risk/reward balance, therefore, may create a barrier to the expansion of Collaborative Streetworks and its associated benefits.

As such, we would propose that the minimum threshold is based on the number of incentive qualifying projects delivered during the RIIO-2 period. This would mean a higher minimum threshold for our London network, where we have been able to embed processes and develop stakeholder relationships during RIIO-2. Conversely, it would mean a zero minimum threshold for the networks[13] where the incentive could potentially be expanded to during RIIO-3.

To implement this the network-specific minimum thresholds could be set out in an Appendix to the relevant licence condition (Special Condition 4.5). If this revised methodology was implemented, the network specific minimum thresholds could then be set as either annual or period thresholds.

As the Draft Determination defines two incentive rates, one for minimum requirement projects and ones for projects of strategic importance, careful consideration will need to be given to which projects count towards the minimum threshold, and which count towards the incentive.

At a recent Ofgem working group, on 11th August 2025, it was suggested that the first projects delivered in any year would count towards the minimum threshold. However, this could create perverse incentives for GDNs to defer when they deliver the higher valued strategic projects, which could reduce the benefits delivered through Collaborative Streetworks. This risk would be even greater if a period minimum threshold was used.

During engagement with Ofgem through the RIIO-3 process they have emphasised the greater benefits from the delivery of projects of strategic importance. As such, it would be logical to encourage GDNs delivery of these, potentially more challenging, projects by counting any minimum criteria projects towards the minimum thresholds first.

[13] Cadent – North West, Cadent – West Midlands, NGN, SGN – Scotland, and WWU

As a minimum a blended rate could be used to calculate the incentive value. For example, if the minimum threshold for London was 7 projects, and they delivered 3 minimum requirement projects and 6 projects of strategic importance then the incentive value would be: (£75,000 x 3/9) + (£125,000 x 6/9) = £108,333, which would then be multiplied by (9-7) [i.e. the number of projects above the cap].

Incentive Rates / Cap

We support the use of the incentive rates and cap value set out in the RIIO-3 Draft Determination document, and the use of a period cap set out in the SSMD. However, the intent of these Determinations has not been implemented within the associated licence drafting consultation published on 30th July 2025.

The Draft Determinations set out that the incentive rate is £75,000 for projects meeting the minimum criteria, and £125,000 for projects identified to be of strategic importance by the central coordinator. The reward cap is defined as 0.17% Return on Regulatory Equity (RoRE).

However, the licence drafting applies the Totex Incentive Mechanism (TIM) strength (50%) to the calculation thus halving the value of the incentive from the policy intent set out in the Draft Determination. RoRE is expressed post-TIM, as confirmed in Ofgem's response to a Draft Determination question that we raised, as such this is clearly an error in the licence drafting – likely to have been left over from RIIO-2 where ODI-F values were expressed as a percentage of Baseline Revenue with some subject to TIM.

The Sector Specific Methodology Decision confirmed that a period cap would be used for RIIO-3, rather than an annual one. This has subsequently been confirmed again by Ofgem in their gas distribution policy working group on 11th August 2025. However, the Appendix 1 of Special Condition 4.5 in the current licence drafting shows a table that shows annual maximum rewards available. This is clearly an error as it does not deliver against the stated policy intent.

As such, we support the incentive rates, incentive cap value and the use of a period-wide incentive cap set out across the Draft Determinations and SSMD (as detailed above) subject to the following changes to the licence drafting of Special Condition 4.5:

- Remove the Totex Incentive Strength "TIS" term from the equation set out in part C.
- Update Appendix 1 to show a period maximum value rather than annual maximum values.
    - Alternatively, remove Appendix 1 and change the definition of term "$CSWC_t$" to "means 0.17% of period RoRE as defined in Special Condition 1.1 Interpretation and definitions".

GDQ20. Do you agree with the introduction of the proposed Biomethane Connections UIOLI, including with the proposed scope and funding caps?

Summary

We welcome and are fully supportive of the ambition to support growth in biomethane, which is increasingly seen as a vital component of our least cost journey to net zero, whilst supporting economic growth and the associated benefits to UK plc. Biomethane represents significant value to current and future gas consumers and we are keen to work with Ofgem and the other networks to ensure all network barriers to growth are addressed.

We note that Ofgem have rejected our proposals for an actual cost pass through mechanism which whilst we continue to believe has merit, our focus is now on how the proposed Biomethane UIOLI mechanism can be refined to deliver tangible benefits. The UIOLI would need to work in tandem with the connection charging methodology, such as the proposed changes we have been developing and have consulted on. Any new mechanism would need to address issues of scope, cap, enduring opex, and the treatment of legacy capacity constraints.

We believe the proposed mechanism can be amended to deliver its intent and we set out later in this question response the work that has already started with Ofgem and the other gas network to identify refinements that ensure the mechanism is able to deliver real value and work coherently with the connection charging methodology.

Why it is important to introduce funding support that aligns with the connection charging methodology

New energy producers want to access their market via the energy network as efficiently and effectively as possible. For the gas networks that were built to take gas from 'Beach to Meter', gas injections in the middle of the system can create entry capacity issues, which require network action and, in some cases, investment to remove the constraint. In electricity for the equivalent issue of embedded generation, the need to deliver the required reinforcements efficiently and effectively is well understood. So are the benefits of socialising reinforcement costs, rather than charging the 'first comer'. We believe there is a strong industry consensus that dealing with entry reinforcement is one of the biggest challenges facing the growth in biomethane connections.

The current approach results in first comers paying if reinforcements are required, which is a barrier. The current framework does not facilitate entry project coordination to share reinforcement costs, as entry gas developers are independent commercial organisations, each with their own drivers, priorities and strategies. Responding to ad-hoc connections is also not conducive to the identification of efficient strategic 'touch the network once' reinforcements. Cadent has therefore consulted upon and developed proposals that address the known issues with entry reinforcement through a change to the connection charging methodology that would introduce a 'High-Cost Cap' (HCC) similar to electricity DNOs, with application windows to allow robust projects being developed in the same timescales to be assessed collectively.

The HCC would protect consumers subsidising high reinforcement costs, and we have shared our draft proposals previously with Ofgem. However, such changes which will socialise an element of entry reinforcement costs, must be supported by an effective funding mechanism which allows Cadent to recover the socialised costs on an enduring basis. The proposed Biomethane UIOLI does not fully address this funding gap, as it is limited in size per connection, and has a cap with no mechanism to increase it should it be exhausted. It also does not address enduring opex costs that some entry reinforcements will generate, and the bill impact of the funding mechanism isn't clear as it is not stated whether the UIOLI is treated as fast or slow money. We anticipated in our charging proposals that it would be preferable to maximise the treatment as slow depreciation capital expenditure to minimise the bill impact.

The Green Gas Support Scheme support does not fund creation of new capacity (it assumed capacity is there)

The Biomethane UIOLI proposals also suggests projects utilising the Green Gas Support Scheme should not benefit from the proposed additional funding, as this would be duplication of support. The GGSS has made no provision for entry reinforcement costs in its construction and only includes a sensible cost allowance for typical local connection works. It is effectively assuming projects connect where there is existing spare capacity, or the project has export constraints, so no reinforcement is carried out. Both these scenarios represent barriers to a step change in biomethane exports as it does not recognise the need to expand the wider networks capacity to accommodate entry flows. The Biomethane UIOLI as currently set out in the Draft Determinations needs refinement and clarification as it does not explicitly recognise or address the current issue of entry reinforcement.

The need to align with the GDN's connection charging methodology

We note that GTs are bound by their Licence to charge for connections in accordance with their approved connection charging methodology statement. If the Biomethane UIOLI was to be implemented as set out in the DD, then each gas network would need to bring forward proposals to change their connection charging methodologies to describe how they will determine each connection's charge net of a contribution from the new UIOLI pot. For example, is it pro-rated by capacity or annual output; should other factors be considered, or should there be a flat rate per connection?

The methodology should also describe what would happen in the event that the UIOLI allowance became exhausted mid RIIO-3, with the added complication that multiple projects could be competing for the same provision. The methodology should set out how projects applying to connect at the end of RIIO-3 but not completing their commissioning until RIIO-4 will be handled, with RIIO-4 funding unlikely to be approved ahead of connection agreements being executed, so that reinforcement works straddle two price control periods. Where there is a change to the connection charging methodology, it is convention to deliver a long-term funding arrangement as to do otherwise would result in unfunded works, with either no progress or delayed development until funding is confirmed.

How the proposal could be refined to work with the connection charging methodology and facilitate biomethane in the most effective way

For the RIIO-GD3 proposals to effectively embrace entry reinforcements going forward, they must also consider funding for other elements including strategic reinforcements for future need, the impact of standard unit sizing for items like compressors, preparatory works to accelerate reinforcement delivery times, and general reinforcements. All issues that are familiar to load related entry reinforcements in the electricity sector.

To build on the high-level funding approach set out in DDs that would also enable Cadent's entry charging proposals if they were to be approved, we would suggest the following:

- Retain the £20m allowance limit per network but introduce a mechanism to review and increase this should it approach being over-subscribed e.g. at 75%. This would need to be initiated and completed well ahead of actual expiry of the allowance to remove any uncertainty for new entry connections. There may be further merit in building in a contingency element that is available to provide industry confidence whilst any review is being progressed. Start/Stop signals to the market should be avoided as far as possible.
- Networks must all submit changes to their Connection Charging Methodology Statements to Ofgem for approval under the Licence governance. These will set out how customer connection charges are calculated to take account of the UIOLI fund and should also define how the funds should be used efficiently and fairly. We therefore see the establishment of a cap on allocated costs to protect against excessive use per connection, would sit within the connection charging methodology statement rather than in Licence or Associated Documents.
- Use the required Guidance Document for Biomethane UIOLI to set out the scope to include

ongoing recurring opex and well-justified wider enabling and facilitation works and to take account of standard sizing that may be initially under-utilised. N.B. It may then be appropriate to remove all biomethane enabling works from NZARD UIOLI or NZASP re-opener scopes.

- Consideration will be needed to how confidence is given to biomethane projects coming forward towards the end of RIIO-3 to avoid a Stop/Go signal to the market that might otherwise be sent. The approval of an enduring charging methodology rather than limited to RIIO-3 funding, would provide that confidence.
- Introduce an ex-post review, described in the Guidance Document, for all projects exceeding an appropriate threshold.
- Note the intention to use the information gained in RIIO-3 to move to a more conventional funding approach for reinforcements in subsequent price control periods.

Interaction with National Gas

We note that the Biomethane UIOLI is also proposed for National Gas. We would ask Ofgem to consider asking National Gas to ensure their charging methodologies do not result in Cadent's customers paying not only for biomethane reinforcements on Cadent's network, but also a share of costs associated with the National Gas biomethane connections. This would be the case if National Gas simply socialise their biomethane UIOLI costs non-locationally in their charges, resulting in costs associated with an NTS project in Scotland, Wales or the South West of England, being charged in part to Cadent's customers. If National Gas Biomethane projects were distributed evenly across the GDNs this would not be an issue, but we know from existing biomethane developments, that geographical distribution is uneven.

Another factor to consider with the Biomethane UIOLI as proposed, is the different Governance arrangements for connection charging methodologies. The GDNs connection methodology Governance is under our Licence Condition (StCon 4B), and the NTS arrangements are subject to industry Code Governance arrangements.

GDQ21. Do you have any views on our proposed design of the Heat Policy Re-opener?

We support the decision to retain a Heat Policy Re-opener to allow for the uncertainty around the government heat policy decision in 2026 and to support the transition to low-carbon heat.

We welcome the confirmation that consequential changes in costs as a result of the government's hydrogen for heat decision, including those relating to property as set out in our business plan, are within the scope of this uncertainty mechanism.

It will be critical that the relevant licence drafting delivers the intent of this policy decision, to confirm that these consequential costs are within the intended scope of this mechanism, without any ambiguity.

Following our experience with triggering the re-opener during RIIO-2, we would also suggest some further improvements to the scope and operation of the mechanism, particularly regarding the trigger related to connections charging arrangements which we outline below.

Scope and triggers for the reopener

The re-opener allows for an upwards or downwards adjustment in response to changes in heat policy, specifically;

- government's hydrogen for heat decision, which is expected in 2026;
- changes to connection charging arrangements for distributed entry connections or domestic premises; and
- changes to requirements on the quality and composition of gas.

We recognise the importance of the mechanism supporting these three areas, particularly as the Heat Policy decision will likely have a bearing on the future policy around hydrogen blending and biomethane integration and development on the network.

Our experience with triggering the re-opener in RIIO-2 under 'changes to connection charging arrangements for distributed entry connections or domestic premises', demonstrated that greater clarity is required on the circumstances to which this trigger can be applied.

For RIIO-3, it would be essential that the licence condition related to this trigger provides clarity on the changes that can be made within the period to ensure the connection charging arrangements can be changed to support the pace of net zero.

The scope of the Heat Policy re-opener should also ensure that any outcomes from Ofgem's review of the Disconnections Framework, and any associated policy decisions, can be implemented within the RIIO-3 framework. Please see our response to GDQ25 for further details.

GDQ22. Do you agree with our proposed scope of the HSE Policy Re-opener?

We do not agree with the proposed scope of the HSE Policy Re-opener. This re-opener should apply to any changes in HSE legislation, policy or approach to enforcement which GDNs are required to comply with. We must comply with our Health and Safety obligations and Ofgem have a duty to ensure that our essential services are funded and financeable.

Specifically, the Draft Determinations have failed to properly consider the evidence to widen the scope in relation to legacy safety disconnections. We discuss this further below.

Whilst we do not agree with the scope of this re-opener, we do agree with the provision of two re-opener windows, along with the ability for the Authority to trigger further windows, for this re-opener mechanism. We also support the use of the default materiality threshold.

Evidence to support the inclusion of legacy safety disconnections within the scope of the HSE Policy Re-opener

The Draft Determinations rejects our proposal to include legacy safety disconnections within the scope of the HSE Policy re-opener, primarily based on a concern that this could lead to customers paying twice for the same work. We understand this concern; however, can categorically confirm that the inclusion of this work within the scope of the HSE Policy re-opener would not lead to customers paying twice for the same work.

Likewise, we understand the concern, set out in the Draft Determinations, that GDNs may not have delivered this work right the first time. However, our response provides evidence that all of this work was undertaken to the acknowledged industry standards at the time, and GDN cost allowances were only reflective of the work undertaken.

Therefore, our proposal, to include this work within the scope of the HSE Policy re-opener, only sets out to enable the funding of the efficient additional costs to deliver compliance in accordance with the evolving regulatory interpretation and approach to enforcement by the HSE.

Without establishing a funding route for this work, the Final Determination would leave GDNs exposed to a level of cost risk, very plausibly well in excess of £100m across the sector, that would not be manageable or acceptable.

Below, we outline in more detail the reasons and justification for including required further works on legacy safety costs in the scope of the HSE Policy Re-opener (or a dedicated re-opener for this purpose).

Legal duties

GDNs have a duty under regulation 14 of the Pipelines Safety Regulations 1996 (PSR) to ensure that any pipeline no longer in use is left in a safe condition. Gas suppliers have an overlapping obligation under regulation 16(3)(b) of the Gas Safety (Installation and Use) Regulations 1998 (GS(IU)R), which requires the last supplier to disconnect the service pipe as near as is reasonably practicable to the main if a gas meter has been removed and not replaced within 12 months (unless there is a dedicated service valve). In practice, GDNs undertake the disconnection work when a meter has been removed and not replaced because suppliers are not qualified or authorised to work on distribution networks. This overlap and this practice are acknowledged and recognised by the HSE in their approved code of practice for GS(IU)R. The approved code of practice also acknowledges that there will be situations where the disconnection will not take place by disconnecting as close as reasonably practicable to the main and, in such situations, the pipes should be sealed.

Methods of carrying out the disconnection

For the last 40 years (since the original GS(IU)R came into force in 1984), one of the ways in which all GDNs (and IGTs) complied with their PSR obligations is by closing and sealing the emergency control valve (ECV) at the end of polyethylene (PE) service pipes, where the ECV was external to the property, e.g. in external meter boxes. In this situation, the ECV was considered to constitute a service valve.

This approach was followed by GDNs in good faith for decades as it was considered to be a safe and efficient solution. This is because:

- The service pipe was isolated, capped, and labelled at the ECV, which was outside the property. This meant that the gas supply was disconnected before it entered the property.
- PE pipes are not subject to corrosion, which could lead to escapes, as is the case with metal pipes.
- The approach avoided excavation to cut off the pipe at the main, yielding significant cost and efficiency savings which benefited all gas consumers through lower network costs.
- The approach also preserved the possibility of reusing the service pipe should the customer (or a future occupant) wish to be reconnected to the gas network. This spared such customers the expense of a new connection.

This method of disconnecting redundant pipelines was set out in GDNs' policies, procedures and safety cases, which were all periodically reviewed by the HSE. Our safety case has been accepted by the HSE under the Gas Safety (Management) Regulations 1996 (GS(M)R) and is reviewed at least every three years, or when there is a material change. Our policies and procedures relating to safety disconnections, namely "Management Procedure: For the monitoring and disconnection of gas services following primary gas meter removal as required under the Gas Safety (Installation & Use) Regulations"(SER/3) has been reviewed by the HSE periodically, e.g. as part of their annual intervention programmes and/or following incidents. For example, SER/3 was reviewed in detail following an explosion in the Wirral in 2017. We have received feedback from the HSE through the years on the way in which we manage safety disconnections and have amended SER/3 where appropriate. For example, we received an improvement notice in December 2018, which was unrelated to the Wirral explosion, but following an HSE review of our processes addressed a concern relating to the disconnection of metallic services which had been inserted with plastic PE pipe. Until 2021/2022, no concerns were raised in relation to the accepted industry disconnection practice of closing and sealing the ECV where it was connected to a PE service pipe with an external ECV.

Change in regulatory expectations (HSE intervention)

In 2021/2022 and following an increase in illegal tampering with gas assets, the HSE started to re-consider the risks around safety disconnections. This has been discussed at an industry level with the HSE through the Gas Transporters Operational Safety Group and Gas Networks Collaboration Forum on a regular basis, and those discussions are still ongoing. The HSE has now stated that it does not consider that closing and sealing an ECV where premises are connected via a PE service pipe with an external meter box to be a safe method if disconnection, or that an ECV is a true service valve, and therefore such a method of disconnection is no longer deemed to be compliant.

This new position adopted by the HSE has a significant impact on the work required and associated costs for: (1) future safety disconnections (following the HSE's decision); and (2) legacy safety disconnections (prior to the HSE's decision):

- Future disconnections (from the beginning of RIIO-3) must be carried out by excavating and cutting off pipes at the mains, except in cases where a true service valve exists.
- For legacy safety disconnections, each GDN needs to prepare an action plan to ensure that network connections that had been disconnected in accordance with the previously accepted industry practice are now cut off as close as is reasonably practicable to the main. This will require GDNs to identify and inspect the legacy disconnections and then excavate and cut off as close as is reasonably practicable to the main. This is a significant amount of work; our business plan uncertainty assessment presented a workload scenario of almost 27,000 legacy disconnections across our networks, which would equate to around £40m of additional costs. However, the latest view of industry data, going back further back in time, suggests this could be closer to 100,000, and therefore £150m.

There will not be duplicative work / inefficient costs

The work required for legacy safety disconnections is not duplicative work, nor are the costs associated with it inefficient. The legacy safety disconnections were carried out according to the accepted standard at the time, industry practices, our safety case and policies in procedures. What is now required is a higher standard of disconnection. The change in approach and the associated costs are driven by revised guidance from the HSE. This has followed an independent quantitative risk assessment by DNV. A new gas industry reference standard is also being developed to reflect this change of approach.

Customers are not paying twice

Firstly, what was funded in previous price controls was based on understood working standards used at the time, not what is now required by the HSE. Disconnections costs are included as part of the maintenance activity within GDNs Business Plan Data Tables (BPDTs). Maintenance itself, whether assessed 'bottom-up' (as at RIIO-GD1) and/or 'top-down' (as at RIIO-GD1, GD2 and GD3 Draft Determinations as part of Ofgem's Totex model(s)) has and is benchmarked between GDNs relative to MEAV, or Maintenance MEAV measures – which each capture the scale of sets of network assets. Neither are measures which capture directly either (i) the volume of disconnections or (ii) the approach used to undertake disconnections by networks. Therefore, when benchmarked across GDNs and when the catch-up efficiency challenge is set, the level of funding provided depends upon the particular solutions GDNs have built into their expenditure forecasts.

As we understand that all GDNs in previous price controls closed and sealed the ECV as set out above as opposed to cutting off services as reasonably practicable to the main (where possible), all have only been funded for delivering this solution to customers to disconnect. Customers received the benefit of the efficient approach taken by GDNs over this period to reduce their bills, relative to the counterfactual and there was no allowance given (nor work done) to excavate and cut off those pipes at the main because it was not required or expected then.

Given the HSEs change in stance on this solution, this will create incremental cost to cut off services close to the main, that would not have been included in GDN's previous expenditure forecasts. The work now required involves a much more labour-intensive process leading to significant incremental costs (e.g., streetworks, digging, isolation and capping at main). This is beyond the scope of what the original funding covered and hence needs to be funded through future price controls. Funding this work is in consumers' interest because it directly addresses a safety concern flagged by the regulator in charge of public safety (HSE). Not addressing it could leave potential risks unresolved.

Funding required during RIIO-3 for this safety critical work

To ensure clarity and avoid burdening customers unfairly, we propose the following approach in RIIO-3:

- **Prospective costs:** Adjust the baseline allowances (or methodologies), and volume driver unit costs, so that going forward, all new required service disconnections are funded at the appropriate cost level for cutting off as close as reasonably practicable to the main. This will ensure that GDNs can comply with their obligations in accordance with the HSE's new requirements.
- **Legacy safety disconnection Costs:** Include legacy safety disconnections within the scope of the HSE Policy re-opener or alternatively introduce a specific uncertainty mechanism. This mechanism could be triggered when the scope and timeframe for working on legacy safety disconnections has been agreed with the HSE. It would allow GDNs to recover the efficient costs of the one-time programme for the further works required with respect to legacy safety disconnections. Oversight measures could be instituted to protect consumers, or they could be included within the scope of a volume driver (see GDQ25), ensuring they fund only the necessary and efficiently incurred expenditure.

This two-pronged approach will mean customers fund the new standard of work going forward and also support the work now required on legacy safety disconnections to bring them up to current

standards. In both cases, this work is now necessary for safety reasons and to ensure compliance with the relevant regulations. As a result, customers gain a safer network and the cost impact is spread across all customers consistent with how previous costs were shared.

Summary

We take our safety responsibilities seriously. Following new guidance from the HSE, we can no longer close and seal the ECV as a method of disconnection. This was the accepted industry standard in place for many years before the recent review by the HSE during the RIIO-2 period.

The costs of the further works required with respect of legacy safety disconnections are not being incurred as a result of not getting it right the first time round or being inefficient. There is now a higher standard of disconnection required in order to comply with the relevant regulations. Customers will not be paying twice for the same work. This is because the additional work required is of a nature and extent that is materially different from the work that was needed to affect the original disconnections. In previous price controls our cost forecasts and corresponding allowances were set in accordance with then prevailing industry standards; and therefore, GDNs were only ever funded for the type of disconnections that they carried out. It is an error of fact and/or law to conclude that legacy safety disconnections were undertaken improperly and not to the standard set by the HSE at the time they were delivered. It is also an error of fact to conclude that customers will be paying twice and/or that the cost of carrying out such works is inefficient.

Legacy safety disconnections need to be brought expressly within the scope of the HSE Policy Re-opener (or a new equivalent freestanding re-opener) in order for Ofgem to comply with its statutory duties, including with respect to safety and financeability. The relevant re-opener licence condition must acknowledge that, while the HSE policy change occurred in RIIO-2, the relevant work will not take place until RIIO-3.

As such, the Draft Determination position must be changed, and legacy disconnection activity must be confirmed as within the scope of the HSE Policy re-opener mechanism.

GDQ23. Do you agree with our proposed design of the Tier 2A Volume Driver?

We agree with the continued use of a volume driver to manage the allowances associated with replacing Tier 2A mains and intervening on their associated services.

Tier 2A workload remains uncertain, as has been seen in the variance between GDN RIIO-2 forecasts and their out-turn workload. As such, we agree with using a mechanism that enables GDNs to be funded for the work they are required to deliver whilst ensuring that customers only pay for the actual workload delivered.

As established data is available to enable efficient unit costs to be set, we agree that a volume driver is the best mechanism to manage the allowances associated with this workload.

We agree that the volume driver should include network-specific unit costs. This is aligned with the approach for RIIO-2 and also the approach for Tier 1 mains and services. It is important that unit costs set are network-specific so that they reflect regional and company-specific factors adjusted for when comparatively assessing costs (to take account of impacts on our activities that raise costs, but which are ultimately outside of our control). For example, and most notably for our North London network to take account of labour cost pressures and the impacts of serving the densest operating area within the country. Further information on our views on these factors can be found in our response to GDQ36.

GDQ24. Do you agree with the scope of our Diversions Re-opener?

We agree with the use of a re-opener uncertainty mechanism to manage costs associated with non-chargeable diversions workload, or efficient costs related to activities that avoid the need to undertake a physical diversion. We also agree with the scope of this mechanism.

We agree with the proposal to include a mechanism that enables for any costs that remain uncertain at the time of the re-opener window to be recovered through the RIIO-3 close out process. However, this is not currently reflected within the licence drafting. As such, it will be critical that the intent of this policy decision is clearly captured within the final licence drafting.

GDQ25 Do you agree with our proposed design and unit rates for the Safety Disconnections Volume Driver?

We agree with the use of a volume driver mechanism to manage the costs associated with safety disconnections. Whilst historically this workload has been fairly stable, it has begun to increase in recent years. It is likely to increase further during RIIO-3; however, to what extent is very uncertain. Our supporting commentary for Business Plan Data Table M8.14 showed a scenario where we could need to undertake almost 620,000 additional safety disconnections during RIIO-3, beyond the c.70,000 estimated in our base plan.

As such, we agree with using a mechanism that enables GDNs to be funded for the work they are required to deliver whilst ensuring that customers only pay for the actual workload delivered.

The Draft Determinations have requested additional cost information as part of a proposed RFI. GDN responses should provide sufficient information to enable Ofgem to set network-specific unit costs.

As such, we agree that a volume driver is the best mechanism to manage the allowances associated with this workload.

We agree with Ofgem that further work is still required to define key aspects of this volume driver ahead of Final Determinations and ensuring the intent of the mechanism is accurately reflected in our gas transporter licence.

This includes defining what a safety disconnection is, what costs should be included within the volume driver, how the unit cost should be set, what volumes of disconnections are included in the baseline forecast, and the need for a specific-re-opener or a review of other re-openers to ensure that the RIIO-3 framework can respond to likely changes in disconnections policy in the coming years.

Defining a safety disconnection

Regulation 16(3)(b) of the Gas Safety (Installation and Use) Regulations 1998 (GS(IU)R) places an obligation on the last supplier to disconnect the service pipe as near as is reasonably practicable to the main if a gas meter has been removed and not replaced within 12 months (unless there is a dedicated service valve). In practice, GDNs undertake the disconnection work in this situation. This is for two reasons: (1) suppliers are not qualified or authorised to work on distribution networks; and (2) GDNs have an overlapping duty under regulation 14 of the Pipelines Safety Regulations 1996 (PSR), which requires GDNs to ensure that any pipeline no longer in use is left in a safe condition. This overlap and this practice are acknowledged and recognised by the HSE in their approved code of practice for GS(IU)R; please see further details on these requirements within our response to GDQ22.

Therefore, for the purpose of setting the scope of this volume driver, a safety disconnection should be defined as any delivered by GDNs but which originate from discharging a supplier's obligation under regulation 16(3)(b) of the Gas Safety (Installation and Use) Regulations 1998.

How should the unit cost be set

The cost to deliver this work will vary by region, as such network-specific unit costs should be used. This is consistent with historic approaches to setting allowances for similar activities such as connections and alterations.

Historically we have not captured pipe size data in relation to safety disconnections, as such the unit cost should not be broken down by pipe size.

To date most safety disconnections have been undertaken by either closing and sealing an ECV or service valve, or where a service valve is not available, by excavating and cutting off the service pipe as close as reasonably practicable to the main. These different approaches have very different costs to deliver. As explained in response to GDQ22, the HSE have determined that it is no longer compliant to close and seal an ECV attached to a PE service with an external meter box. This means that there

will be an increase in the number of safety disconnections that have to be undertaken by excavating and cutting off as close as reasonably practicable to the main, which is a much more time consuming and costly method of disconnection. There are two approaches that could be used to set the unit cost(s) for the volume driver:

1. Set a single unit cost per network, using the cost of excavating and cutting off the service pipe as close as reasonably practicable to the main; or
2. Set two unit costs per network, one for the simpler service valve disconnection approach and one for the more complex to the main approach.

What costs should be included within the volume driver

The volume driver allowances should cover labour, materials, vehicle, mobile plant, streetworks, traffic management, and overhead/back-office costs.

In an industry working group, on 28th July, it was discussed that back-office (overhead) costs should not be included within the volume driver and should instead be delivered within baseline allowances. We do not agree with this position. Such costs need to be covered specifically in the volume driver as they are currently uncertain but could be significant, and certainly more significant than in RIIO-2. This is for two main reasons:

1. The overall volume of safety disconnections will increase over RIIO-3. It is not credible to believe that if these volumes increase significantly, for example from 15,000 per year to over 100,000 per year, that our back-office costs would not increase.
2. Safety disconnections undertaken by cutting off as close as practicable to the main are going to increase, as a portion of the total volume, in RIIO-3. The overhead costs associated with this type of disconnection in significantly greater than if we can seal a service valve. For example, greater planning and reinstatement requirements.

The overhead costs need to be included within the volume driver given this uncertain, but likely, increase in costs or GDNs will be underfunded for this safety critical work.

If overheads are not included within the scope of the volume driver, the only alternative, that would not leave GDNs underfunded, would be to include uplifted baseline allowances with overhead costs aligned with a plausible high volume during RIIO-3. However, given the range of uncertainty on volumes, this is also unsatisfactory as if this plausible high case did not materialise our customers would pay higher costs than needed.

Broader Disconnections policy decisions

As described in the RIIO-3 Sector Specific Methodology Decision (SSMD) and Draft Determinations, Ofgem has committed to undertake a review of the disconnections framework. Early engagement on this has begun and it is clear that there are a wide range of policy decisions that are needed to define a disconnections framework that is fit for the energy transition.

As such, it will be vital that the RIIO-3 framework is able to respond to these policy decisions. If it could not respond then the regulatory framework, Ofgem and GDNs may be seen as blockers to the energy transition. To ensure the required flexibility a specific disconnections policy re-opener could be defined in Final Determinations. Alternatively, the scope of the re-opener mechanisms already included in the Draft Determinations could be tested, and potentially adjusted, to ensure they sufficiently enable GDNs to respond to potential changes.

Below we set out a number of the policy decisions that are likely to be addressed as part of the Disconnections framework review, and a table containing some suggestions for adjustments to the uncertainty mechanisms set out in the Draft Determination to ensure that the RIIO-3 framework can respond to these decisions.

Potential policy questions to be answered during the review of the Disconnections Framework and that the RIIO-3 framework needs to be able to respond to:

- Should disconnection from the gas network be done piecemeal or strategically planned?
- Should there be a rationalisation from two to one disconnections process/route for customers? (i.e. combine safety and voluntary processes)
- Who is best placed to be the coordinator of the disconnections process / primary requestor to GDNs? (i.e. supplier or end customer)
- What constitutes a disconnection? What is required to make safe?
- If there was an HSE approved approach to mothball a service would that be desirable? Should there be a time limit to mothballing?
- Is it desirable for this to remain a monopoly activity or is it desirable to introduce competition?
- What incentives could be placed on a monopoly provider? Efficiency/innovation incentive?
- Are there any barriers to competition? e.g., NRSWA
- Who should pay for the direct costs of disconnecting from the gas network? The specific customer, or socialised across gas consumers or all energy consumers?
- How should costs for the stranding of the service disconnection portion of the GDN RAV be recovered? Should this be put in a decommissioning pot?
- What legislation / licence / codes / policies need to change to enable a solution?

Initial thoughts on ensuring the uncertainty mechanisms set out in Draft Determinations can respond to changes in the disconnections framework:

Uncertainty mechanism	**Adjustments to scope of re-opener to ensure outcomes of review of disconnections framework can be implemented**
Heat Policy re-opener	Ensure scope includes the ability to manage a wide range of possible outcomes from the disconnections framework review. A non-exhaustive list of examples could include: • Change the charging methodology associated with disconnections. For example, if it was decided to use a voluntary route but with some subsidy (i.e. like the DLCA). • The ability to update or close the safety disconnections volume driver. For example, so that the scope could be broadened beyond safety disconnections should a policy decision deem this to be the single route for all disconnections. Or alternatively, close the volume driver should the policy decision deem that all disconnections should be via the voluntary, or a competitive route. • Establish a disconnection of last resort obligation (like the historic meter provider of last resort obligation), should the policy deem a competitive approach preferable but with a monopoly provider safety net for customers.
HSE Policy re-opener	Ensure the scope can manage changes to the definition of what a disconnection is, to relevant licence conditions, and the associated impact on costs/allowances. For example: • All disconnections to be undertaken by excavating and cutting off the service pipe as close as reasonably practicable to the main. • All legacy disconnections undertaken by either closing and sealing an ECV or service valve to have additional work to excavate and cut off the service pipe as close as reasonably practicable to the main. • A new innovative approach to mothballing is service is approved by the HSE that would reduce disconnections costs and/or provide greater future proofing options. •

Safety Disconnections volume driver	Ensure unit cost includes overheads/back-office costs. Set either: • A single unit cost per network, using the cost of excavating and cutting off the service pipe as close as reasonably practicable to the main; or • Two unit costs per network, one for the simpler service valve disconnection approach and one for the more complex to the main approach.
Specified Streetworks re-opener	Ensure the scope includes increased costs relating to existing schemes due to increased workload can be recovered.

GDQ26 Do you agree with the proposed design of the New Large Load Connections Re-opener, including our proposal to include general reinforcement projects in its scope?

We agree with the use of a re-opener uncertainty mechanism to manage costs associated with specific network reinforcement required by new large load connections / alterations. This is customer driven and can be related to a number of uncertain micro and macro-economic exogenous factors.

We also agree with the use of a re-opener uncertainty mechanism to fund general reinforcements, given the disallowance of all this workload from baseline allowances.

However, we disagree that general reinforcement activities fit within the existing scope of the re-opener. The RIIO-2 Final Determination was explicit that the scope only related to specific network reinforcement required by new large load connections.

Extract from RIIO-2 Final Determinations: Gas Distribution Annex

> **New large load Connection(s)**
>
> **Purpose:** An ongoing re-opener from RIIO-GD1, providing GDNs with the opportunity to recover efficient costs directly incurred as a result of specific network reinforcement required by new large load connection(s).

Therefore, the scope of the re-opener mechanism, and associated licence drafting, will need to be broadened to ensure that these costs can be recovered.

For example, general reinforcement could be required due to general growth in a specific geographical area leading to poor pressure in the network or risks to being able to meet 1-in-20 requirements. But these would not fall within the current scope set out in our licence.

It will be critical for our acceptance of the Final Determinations that the intent of this policy decision to include general reinforcement activities and costs within the scope of this re-opener mechanism is clearly captured within the licence drafting with no ambiguity.

During the RIIO-2 price control review process we had Medium Rise MOBs survey and maintenance workload, and associated costs, removed from our baseline allowances with the stated policy intent that this would be included as an extra trigger within the MOBs Safety re-opener. However, due to ambiguity in the licence drafting, which we identified through the licence drafting consultation process, our efficient costs associated with this safety critical work have not been allowed – leaving our shareholders exposed to over £30m of unavoidable costs beyond allowances. As such, we will not be able to accept this ambiguity again in the Final Determinations and associated licence drafting.

We disagree with the proposal for just one re-opener window, specifically in relation to specific reinforcements. This is customer driven work, with some requirements potentially only becoming known after January 2029 but needing to be delivered before the end of RIIO-3.

As such, the re-opener, and associated licence drafting, should include the ability to consider costs incurred after the trigger window as part of RIIO-3 close out, as has been proposed for diversions. The licence drafting should also enable the Authority to direct additional windows. This has been useful in other re-opener during RIIO-2, as it has enabled response to unexpected events that impact Ofgem's ability to assess company applications. For example, the January 2023 where Ofgem had resource constraints due to needing to redirect resource from networks to retail activities.

GDQ27 Do you agree with our proposal to retain the RIIO-GD2 scope of the Specified Streetworks Costs Re-opener?

We do not agree with the proposal to retain the RIIO-GD2 scope of the Specified Streetworks Costs re-opener. The scope of this re-opener needs to be broadened to explicitly include material uncontrollable changes in costs relating to the application of existing schemes.

We are required to comply with all Highways Authority requirements, and we have seen that these consistently and significantly increase over time, both in terms of new schemes but also within existing schemes (for example in the case of parking bay suspensions more bays could be included and/or the cost 'per bay' could increase within an existing scheme, or permits requiring the use of manned traffic lights). Likewise, workload could increase so that a GDN needs to deliver more workload within the footprint of existing schemes (for example if there was a significant increase in disconnections from the gas network).

In RIIO-2, the combination of how Streetworks allowances were set for GDNs, which was based on the average cost over a 10-year period (five years historic costs, five years forecast costs) and the proposed application of the re-opener in the recent Draft Determinations[14] currently means that companies are systematically underfunded in complying with these requirements. This is because, to date, no existing Streetworks schemes have reduced their requirements nor reduced or not increased their fees. Given the greater application of Streetworks schemes in the Greater London area, it means that our London network is most exposed to this systematic underfunding, as has been seen in other areas of the draft determinations.

As an example, over the first three years of RIIO-2, the Streetworks costs we have incurred compared to our plan were 37% higher on average across all our networks. These additional costs did not relate to the introduction of any new Highways Authority requirements, but instead changes and increased requirements in respect of existing schemes.

Despite setting the efficiency benchmark for RIIO-2 and delivering the stretching efficiencies we committed to in our RIIO-2 business plan, our costs are out-turning significantly higher than our allowances. Consequently, our shareholders are currently forecast to make a return on their investment that is lower than the allowed rate of return for the RIIO-2 period. Our assessment of the RIIO-3 Draft Determinations, as detailed in our response to question FQ17, shows that in the balance of probabilities this is likely to be repeated during RIIO-3. This imbalance in the RIIO-3 framework set out in the Draft Determination, is amplified in our London network and our exposure to increasing Streetworks costs is an important factor.

Therefore, action is required to mitigate the issue of continued systematic underfunding into RIIO-3. Our response to GDQ41 sets out how ex-ante allowances should be set for RIIO-3 to reduce this issue. However, this still does not mitigate the issue as we have seen costs associated with existing schemes increase beyond levels that could reasonably be forecast.

As such, the scope of the Specified Streetworks Costs Re-opener, including the associated licence drafting, should be broadened to explicitly include changes to existing schemes that result in material changes in costs. Regardless of whether increases in these uncontrollable costs relate to new or existing schemes, if they breach the default materiality threshold, they would place significant cost pressure on our business.

We therefore propose that Special Condition 3.17 be updated to say:

"3.17.7(a) relate to new and/or changes to existing permit schemes, lane rental schemes or requirements that have been imposed or are expected to be imposed on or after 1 April 2026"

[14] https://www.ofgem.gov.uk/sites/default/files/2025-07/RIIO-2-Re-opener-Applications-2025-Draft-Determinations-GD-Annex.pdf

GDQ28 Do you agree with our proposal to reject Cadent's proposed pass-through to facilitate biomethane connections?

We continue to believe that our actual cost recovery proposal with the inclusion of an ex-post review for inefficient and wasteful expenditure is the best funding model to address the known challenges of entry reinforcement. However, in our response to GDQ20 above, we have set out how we believe the proposed approach of a UIOLI could be refined to be consistent with the changes to our connection charging methodology statement we have consulted on. We are planning to submit these changes shortly which are designed to support biomethane and entry reinforcement.

GDQ29 Do you agree with our proposal to reject SGN's proposed pass-through for Joint Office of Gas Transporters services?

We do not agree with the rejection of the proposals to pass-through Joint Office costs, as there is no evidence in the DD that the evidence provided by ourselves and other GDNs has been properly considered. We note that it was not only SGN that raised this issue which impacts all Gas Transporters.

The DD argues that cost pass through is not appropriate as Joint Office costs are mostly in the networks control. There is no evidence that Ofgem have engaged with or considered the implication of the Code Reform process or the emerging Code Manager proposals. We clearly referenced these in our Business Plan, as did other Gas Transporters.

We think this is inconsistent and discriminatory given Ofgem's acceptance of cost pass through for Code Managers and other central roles such as the NESO. We note as well that cost pass through acts both ways and protects consumers from paying for an expected service that is no longer required.

We do not agree that the GTs have control over what is an industry led process, and for which industry and at times Government and Ofgem expect Code bodies such as the Joint Office, to cope with urgent and resource intensive change implementation. Code Reform itself is an example of the uncontrollable nature of the work, with the development requiring considerable resource to support Ofgem's thinking, and to consider and develop Code Manager proposals, whilst effectively engaging with stakeholders.

The provision of Joint Office services is not an optional role that GTs can determine whether they fully resource and prioritise within their overall price controlled Totex allowance. It must be carried out and it must be carried out be all networks to the same degree. This cannot be done effectively and consistently without cost-pass through and is impossible if the future workload is likely to increase massively with Code Reform.

Unlike any other industry code, without cost pass through the Gas Transporters would be liable for all costs associated with Code Reform as well as dealing with the considerable uncertainty the energy transition could have on the UNC. We would welcome a discussion with both the RIIO-3 and Code Reform teams in Ofgem ahead of Final Determinations, as well as the other GTs to ensure an equitable funding mechanism is put in place that does not present a barrier to Code Reform itself.

In our Business Plan submission, we included as an uncertainty an estimated cost of £15.3m for a potential expanded Code Manager role.[15] If Ofgem are not able to accept the well justified proposals for cost pass through, we would request confirmation of what other Uncertainty Mechanism would be implemented. Should no uncertainty mechanism be acceptable then the final fall back would be the inclusion of our forecast costs in our baseline funding.

We also do not believe it is simply a question of whether a network has control that is the only test for cost pass through and point out that the much larger Central Data Service Provider services are treated as cost pass through.

This is a significant funding issue that needs to be properly addressed to support the Government's and Ofgem's stated aim to transition to a single gas industry Code Manager. A considered and consistent approach is required building on the precedents set across the gas and electricity sectors.

[15] We have provided an updated view of Joint Office costs in Cadent-DDQ067 which we have submitted to Ofgem alongside this response for incorporation into its Final Determination.

GDQ30 Do you agree with our proposal to reject WWU's proposed pass-through for plant protection services?

WWU correctly identify that there will need to be additional funding to cover the National Underground Asset Register (NUAR) fees once this service has been rolled out. This cost is **not** included in our submitted business plan.

As stated by Ofgem in section 4.67 of the gas distribution annex, we do not yet have certainty around the cost of this service for Cadent (anecdotal estimate of c.£10m per annum for all asset owners combined has been quoted by our maintenance teams).

We expect that, given our asset length represents a significant proportion of all asset owners, the impact will be material enough for Cadent to require additional allowances to cover the incremental cost for the following reasons:

a. This is not a replacement for our existing solution (LSBUD) and will need to be used alongside it, taking additional time and resources to administer. As it currently stands, NUAR is a live map that provides asset records; it does not assess proposed works and enable us to provide specific guidance to avoid damage to our assets.

b. Ofgem's suggestion that NUAR is expected "to increase efficiency of data sharing and excavations, leading to fewer accidental strikes on underground pipes and cables, and reduced disruptions for the public and businesses", will not be the case in practice. Although many of our assets do interact with highways, we also have large volumes that do not (i.e. farmland, private land, canals, rail) and these areas are typically at a higher risk of interference from third parties, and as such LSBUD is the only mechanism that provides coverage for these assets. NUAR is only legislated for highways and therefore does not provide a level of coverage that would result in sufficiently lower disruption costs to offset the cost.

c. We have not had sight of any evidence that NUAR will lead to less utility strikes. Introducing this mapping will not guarantee safe digging because NUAR does not actually provide the facility to notify Cadent of people searching areas where our assets are affected, potentially meaning that they could proceed without notifying us even if we are required to take action. This lack of visibility has the potential to increase workload and the risk of incidents because third parties have a way to circumnavigate our existing and well-established plant protection processes.

We therefore do not agree that the cost of NUAR will be fully offset by the efficiency benefits stated by Ofgem (data sharing, excavations, fewer accidental strikes and disruptions) so additional allowances will be required.

Treating the cost as passthrough is one option we would support, or alternatively this could be recovered via either the digitalisation RIIO-3 re-opener (as a new development that contributes to the further digitalisation of the energy sector) or the resilience RIIO-3 re-opener (as a new government backed initiative aiming to increase resilience, where the costs are not yet known).

GDQ31 Do you agree with our proposal to not introduce a CDS Re-opener and instead fund any resubmitted workloads through NARM, if approved?

We agree with the proposal to fund resubmitted CDS workloads through the NARM mechanism, provided that certain conditions are met to ensure fair, transparent, and effective treatment of these interventions. Our position is based on the following considerations:

1. Alignment with Evolving Regulatory Frameworks

While CDS interventions are not currently defined within the Cost and Volume BPDT or modelled within NARM, we recognise the potential for NARM to evolve and accommodate these interventions. With appropriate development of risk mapping, intervention categorisation, robust testing and sufficient industry consultation NARM could offer a consistent risk-based approach to funding CDS workloads in RIIO-3 either through A2 interventions or through a clearly identifiable route.

2. Conditional Support Based on Risk Output Development

Our agreement is conditional on the development of robust risk outputs for CDS interventions. Without these, there is a risk that funding decisions will not reflect the true value of the work undertaken. We encourage Ofgem to work with stakeholders to define the necessary outputs for GDNs within NARM for RIIO-3.

3. Recognition of Uncertainty and Materiality

We recognise the uncertainty surrounding CDS workload volumes and the costs associated for any interventions in RIIO-3. While we support the use of NARM as a developmental avenue, we also recommend that Ofgem retain flexibility to consider a re-opener mechanism if materiality thresholds are exceeded or if risk outputs cannot be sufficiently defined in time.

Conclusion: We support the DD proposal to fund CDS workloads through NARM, contingent on the development of appropriate risk outputs, cost assumptions, and materiality thresholds. This approach promotes consistency and transparency, while ensuring that CDS interventions are appropriately recognised within the regulatory framework.

GDQ32. Do you agree with our proposed use of a 'top-down' regression model?

In line with proposals and arguments made within our RIIO-3 Sector-Specific Methodology Consultation (SSMC) response and our Business Plan, we support the use of top-down (totex) regression models for comparative efficiency assessment in principle. However, this is subject to the top-down model or models utilised being:

- correctly specified;
- based on correct underlying data; and
- justified on the basis of correctly applied and interpreted statistical tests.

We have identified a significant number of material calculation errors in Ofgem's published Draft Determination modelling suite and in Ofgem's use and interpretation of statistical tests to justify particular model specification decisions. Therefore, whilst we agree with the use of a top-down regression model, we do not agree with the specific top-down model utilised to assess efficiency in the Draft Determinations. Our reasons for this are expanded upon this below.

We agree with the use of top-down regression models in principle, but they must be correctly specified

As stated in our SSMC response, if accurately specified, a top-down or totex level benchmarking model or models offer advantages over more disaggregated benchmarking:

- firstly, a totex benchmarking model can control for the ability of GDNs to make cost trade-offs between different types of activities and avoid inaccurate cost benchmarking at a disaggregated level, where differences in capitalisation policy and/or cost allocation between ownership groups have the potential to make a GDN appear efficient in one cost category when some GDNs make legitimate decisions not to allocate to that category than others; and
- secondly, a totex benchmarking model avoids potential perverse incentives to shift costs between cost buckets for companies depending on their cost assessment treatment – particularly given the lack of more disaggregated models for certain categories of spend.

Moreover, bottom-up modelling performed worse statistically than totex modelling at RIIO-GD2, and continues to do so at RIIO-GD3 based on the results of our statistical testing of Ofgem's Draft Determination error-corrected model (see below for further discussion of these error corrections). For example, across all bottom-up models, the explanatory power of said models is significantly lower than the totex model.

Therefore, in principle, we support Ofgem's decision to use top-down regression model(s) to comparatively assess costs at RIIO-GD3. However, the advantages described above rely on the top-down model(s) being accurately specified. If the top-down model is mis specified, then the advantages described above do not materialise and in fact, the resulting modelled costs and allowances risk being erroneous due to biases in the model.

An econometric regression is mis specified when the assumptions of the model, such as the variables included or the functional form, are incorrect or incomplete. Upon review of Ofgem's proposed model, we have identified a key source of misspecification which is likely to result in an error in the assessment of GDNs' efficiency. Specifically, the failure to include a totex model in Ofgem's model suite which utilises a density variable (alongside other required pre-modelling adjustments, such as a Regional Labour Adjustment) in the model specification, which results in Omitted Variable Bias, and ultimately an underestimation of the London GDN's efficiency.

We discuss sources of misspecification and our proposed remedies to these in our response to GDQ37.

Ofgem's published Draft Determination model contained a number of calculation errors, which invalidates conclusions drawn on the preferred model specification

To allow Ofgem to set GDNs' allowances accurately, it is imperative that the implementation of a top-down totex regression model, or models, is done correctly, free from calculation errors. Through our quality assurance process we have identified (and submitted to Ofgem) 112 potential errors within Ofgem's underlying modelling files (see Annex GDQ32 – 1), many of which are highly material. For example, Ofgem erroneously excluded c.£90m of streetworks costs from regressed costs, which are assessed via its top-down regression model over the GD3 period for NGN, instead of c.£9 million. Correcting this error results in NGN moving from being the first-ranked GDN in the efficiency assessment to the second-ranked GDN, behind Cadent's West Midlands GDN.

To demonstrate the far-reaching impacts of these errors on our price control, we have run our own version of the totex regression model in which we have, to the extent sufficient information is available to us, corrected these errors (while otherwise adhering to the totex regression methodology used by Ofgem in the Draft Determination). Table 1 below shows the key results of this "Cadent Error-Corrected" model compared with those of Ofgem's Draft Determination model, including a disparity of £98.5m in the overall totex allowance proposed for our networks. The differences are clearly significant. As such, all totex regression model results shown in the rest of our responses are based on our error-corrected model, unless stated otherwise.

Further, errors of this material nature within Ofgem's modelling suite show that Ofgem's Draft Determination model specification decisions were based on an incorrect dataset, and as a result renders any subsequent statistical testing and choices made by Ofgem on the basis of statistical inference, also erroneous. Given the significant change in the underlying data being fed into the regression and non-regression analysis resulting from the correction of the calculation errors, it is important that Ofgem reconsiders the evidence presented within our business plan (particularly relating to model specification and pre-modelling adjustments), and re-iterated in our responses, based on the corrected data.

As a result of the number and materiality of calculation errors in its model suite, Ofgem itself has re-issued its Draft Determination modelling files with the GDNs on 13th August 2025 (called it's "Issue Corrected Model"). Given that Ofgem's Issue Corrected Model was only shared with GDNs over six weeks into the consultation window, there has not been sufficient time to comprehensively check Ofgem's updated model and update our consultation responses in light of it. However, from what review we have been able to undertake of the results, we noted that there still remain errors to be remedied in Ofgem's work and corrections to be applied to errors Ofgem has attempted to fix but incorrectly implemented. As a consequence of this, the model results referred to in our response are (as noted above) generally based on our Cadent "Error-Corrected" model rather than Ofgem's "Issue-Corrected Model" modelling. However, for the purpose of high-level comparison, we have included the headline figures from Ofgem's updated Draft Determination model in Table 1 below (alongside the results of the original Draft Determination model and our error-corrected model, as noted above).

Table 1: GDN Efficiency Scores: Draft Determination Model, Ofgem Issue Corrected Model, and Cadent Error-Corrected Model

	Ofgem Draft Determination Model	Ofgem Issue Corrected Model	Cadent Error-Corrected Model
EoE	0.97	0.96	0.96
Lon	1.02	1.06	1.04
NW	1.03	1.01	1.01
WM	0.94	0.94	0.94
NGN	0.91	0.96	0.96
Sc	1.01	0.99	0.96
So	1.04	1.04	1.03
WWU	1.15	1.12	1.15

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3. #
Source: Cadent Analysis

Table 2: GDN Allowances: Draft Determination Model, Ofgem Issue Corrected Model, and Cadent Error-Corrected Model (£m, 2023/24)

	Ofgem Draft Determination Model	Ofgem Issue Corrected Model	Cadent Error-Corrected Model
EoE	2,092.24	2143.82	2,129.93
Lon	1,676.57	1670.27	1,676.67
NW	1,397.50	1445.68	1,439.22
WM	1,116.18	1140.37	1,135.13
NGN	1,568.14	1545.85	1,542.63
Sc	1,051.21	1107.91	1,091.82
So	2,378.77	2460.32	2,438.78
WWU	1,501.70	1571.25	1,564.09
Cadent Total	**6,282.49**	**6400.14**	**6,380.96**
Industry Total	**12,782.31**	**13085.47**	**13,018.28**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent Analysis

It will be necessary for Ofgem to correct these errors and revisit the methodological decisions that were based on them, in order to comply with its statutory duties, e.g., to ensure GDNs are able to fund the activities that their customers need and to adhere to the regulatory principle of consistency.

Statistical tests used to guide Ofgem's decision-making on model specification have also been interpreted in error in the Draft Determination

Statistical tests can be used to assess the choice of model specification, if the results are interpreted correctly. Throughout our response we refer to six common statistics and statistical tests which we, and Ofgem, have used to inform model specification. These tests are:

- **Significance Testing**: Significance testing assesses whether the estimated coefficient on a variable is statistically significantly different from zero, and hence how confidently we can

conclude that the variable has a meaningful effect on the dependent variable (totex). Significance tests are generally applied using "significance levels" of 10, 5, or 1%. This means, for example, that when coefficient is significant at the 1% level, if we reject the "null hypothesis" that the coefficient is equal to zero, there is only a 1% chance that we are wrong.[16] Ofgem often uses hypothesis testing to select cost drivers.[17]

- **Adjusted R-Squared**: The adjusted R-squared is a measure of the model's explanatory power, meaning that the selected cost drivers' ability to explain variation in the dependent variable. As the adjusted R-squared approaches 1, the model's explanatory power increases. However, small movements in the R-squared should not be used alone to guide model selection decisions. We discuss this further in response to GDQ37.
- **RESET Test**: The Ramsey RESET test assesses whether the model is of the correct functional form. However, it is not a general test, which if passed confirms a model is correctly specified. Rather it only examines whether a model could be improved by including nonlinear combinations of existing independent variables. Therefore, if the RESET test fails, it only *may* indicate a specific type of misspecification, where the model specification should contain a different functional relationship between the dependent variable and one or more of the independent variables.
- **Normality Test**: The normality test examines whether the residuals (error terms) from the regression model follow a normal distribution. The normality of residuals is assumed in some other statistical tests, such as in some approaches to significance testing. However, failure of the normality test does not result in biased coefficient estimates. Further, normality of the error term is not required under asymptotic assumptions, which are a set of conditions which are assumed to hold when the sample size of a regression becomes very large. We note that Ofgem assumes that asymptotic assumptions hold in its GD3 dataset, based on its reliance and use of clustered standard errors, which require asymptotic assumptions to hold to be valid. We discuss this further in response to GDQ37.
- **Heteroskedasticity Test**: The heteroskedasticity test checks whether the variance of the error term of the regression is constant (homoscedastic) or varies with the level of the independent variables (heteroskedastic). If a model exhibits heteroskedasticity and the residuals are correlated within clusters (e.g., within each GDN's observations), but not across clusters, clustered standard errors can be used to obtain valid inference.
- **Pooling Test**: The pooling test evaluates whether data from different groups or time periods can be combined (pooled) into a single regression model with common coefficients, or whether separate group-specific models are necessary. It tests the null hypothesis that the coefficients are equal across groups, with rejection indicating that pooling is inappropriate due to structural differences.

These statistical tests can be useful in model selection processes and have been used by Ofgem to justify its Draft Determination model specification. However, to draw inference from these statistical tests requires (i) data to be feeding correctly into the regression model in question (which as set out above was not the case in the published Draft Determination model) and (ii) their accurate interpretation. Drawing inference and making model specification decisions based on underlying data containing errors or incorrect application or interpretation of these tests can lead to erroneous model selection decisions being taken by Ofgem.

We discuss such an error in our response to GDQ37 in respect of density modelling, where Ofgem has cited failure of statistical tests set out above to justify not using a density driver (with appropriate pre-modelling adjustments) in top-down regression model or as an additional model within a multiple top-down model approach.

16 Or, in statistical terms, the probability of a "type 1" error is 1%.
17 Ofgem (1 July 2025), GD Annex, para. 5.44

GDQ33 Do you agree with our assessment approach for IT&T?

At Draft Determination, whilst Ofgem did undertake a bespoke IT&T assessment of proposed projects, they did not exclude IT&T costs from comparative regression analysis, describing these costs in general as not meeting the criteria set out in its SSMD for separate assessment (in response to WWU's proposal for these costs to be excluded)[18] . We agree with Ofgem's decision in line with our views communicated to the RIIO-GD2 Draft Determination and the change Ofgem made to include all IT&T opex and capex in regressed costs for RIIO-GD2 Final Determination. Further detail on our views on cost exclusions is set out within GDQ36.

We summarise our views relating solely to the bespoke IT&T assessment undertaken by Ofgem in our response to this question. We provide further underlying detail to support our position in Annex GDQ33-1.

Ofgem's assessment approach for IT&T investments (use of stage gates, assessment criteria, scores and weightings) is consistent with how it has assessed reopeners historically.

However, we have specific concerns around how Ofgem has applied its criteria, and whether all the evidence we have provided to support our investment cases has been considered. In particular, we are concerned that RAG ratings do not fully reflect the extensive information that we submitted in our SQ72 response in March 2025.

In addition, we have specific comments about how Ofgem have assessed INV29 (Enterprise Risk Management) and IT Baseline capabilities.

Additional information on our investment cases to inform the assessment

Below we highlight the evidence and information we have provided which we believe meets Ofgem's criteria to receive a 'Green' rating.

Economic Case (Value for Money)

Relevant investment cases: INV01, INV02, INV17, INV28, INV31

Our SQ72 response sets out a range of benefits driven by each investment. There is granular detail around cost composition e.g. RIIO-3 annual profile, disaggregation into different categories. The assumptions underpinning these estimates are clearly explained.

We demonstrate how this investment is likely to have a Benefit Cost Ratio (BCR) >1:

INV01: End of Life (EoL) driver

[redacted]

A significant benefit of the chosen solution is to have a modern foundation to move with the times and leverage benefit from future technologies. The solution is scalable without significant reinvestment, allowing for expansion or increased usage without proportional cost increases, improving cost-efficiency over time, with changes in costs already built into our baseline cost forecast. The intention is to continue to sweat the asset in future RIIO periods as well, which speaks to the longevity of the preferred solution. The risks mitigated and costs avoided, together with the selection of a long-term solution, means that this investment is likely to result in a BCR>1.

INV02: EoL driver

[18] Ofgem (2025), "RIIO-3 Draft Determinations – Wales & West Utilities Annex", para 5.34

As set out on p2 of the SQ72 response, we have been advised that the current Field Services Management (FSM) solution will reach End of Life in December 2026. Obsolescence could lead to delays in work allocation and scheduling, which risks us breaching our obligations if our engineers are unable to attend a site as soon as is practicable.

Given this strong driver for action, our chosen hybrid solution strikes the best balance between deliverability, future flexibility and cost to drive benefits (see SQ72 response p6-8 for details of optioneering).

INV17: Cyber driver

[redacted]

INV28: rationalisation driver

[redacted]

INV31: rationalisation and obsolescence driver

[redacted]

Our preferred option is the one which delivers the cost significant benefits, aligns most closely with our strategic objectives and facilitates a smoother transition towards modernised operations (see SQ72 response p6-7). The benefits have been built into our RIIO-3 plan as avoided costs (in other words, our totex forecasts do not include the additional costs that would be associated with the maintenance of outdated systems).

Cost Assessment (Scope)

Relevant investment cases: INV01, INV02, INV15, INV17, INV28

The SQ72 response clearly articulates the scoping of the Minimum Viable Product (MVP) and demonstrates the maturity of these projects. We describe the detailed plans in place for the delivery of these projects. For some investments we provide new information (post SQ72 submission) where scoping work has continued to evolve.

Cost Assessment (Certainty)

Relevant investment cases: INV01, INV02, INV03-P8, INV15, INV17, INV28, INV31

The SQ72 response demonstrates that we have identified the required resource and skills for these projects. Where relevant we have supplemented this with excerpts from the original investment justification papers (consistent with Ofgem's Business Plan Guidance, these were not submitted alongside the business plan) to provide evidence of the granular level at which we identify resources.

The SQ72 response also provides extensive additional detail on risks/uncertainties and how these can be mitigated.

Cost Assessment (Assurance)

Relevant investment cases: INV01, INV02, INV03-P8, INV15, INV17, INV31

Our SQ72 response shows details of the Gartner benchmarking we have carried out. This shows our costs towards the lower bound of typical ranges. The response also sets out our cost estimation methodologies.

Needs Case

Relevant investment cases: INV03-P8, INV15, INV31

In describing the optioneering we have done, our SQ72 response clearly sets out the Needs Case for these projects and how they align with our overall strategy. We make clear why current systems are unsuitable going forward and show the suitability of our preferred solution. For INV15 we also refer to additional information about the threat environment that has emerged since the SQ72 response was submitted.

Comments on other investment cases

We note that no funding has been allocated to INV29. We believe Ofgem should reconsider this decision for the following reasons:

- [redacted]

- We have carried out an architectural review to understand the impact of disallowing this investment. We found that key capabilities across the organisation would be significantly impacted and that overall failure to invest would result in decreased resilience, reduced stakeholder confidence and increased exposure to harm.

The criticality of this area has increased due to a variety of factors. It includes ongoing expenditure to support major Ofgem cyber and data programmes, in an environment of ever-increasing cyber threats and increasing costs (for example due to high market demand for technical expertise.

GDQ34 Do you think we should make any amendments to the assessment framework or the thresholds employed?

As set out in our response to GDQ33 we believe the assessment framework is appropriate, but we suggest the assessment of the Enterprise Risk Management project is reconsidered for Final Determination.

GDQ35 Should any cost categories be included or excluded from the assessment?

We feel that Ofgem has considered the cost categories in a comprehensive manner.

GDQ36 Do you agree with our proposed approach to pre-modelling normalisations and adjustments?

Ofgem's comparative assessment of GDN costs involves a number of pre-modelling normalisations and adjustments including adjustments for:

1. Regional and Company-Specific Factors;
2. Cost Exclusions – for separate assessment (either non-regression or Technical Assessment);
3. Other adjustments – to seek to ensure costs feeding into totex assessed via comparative benchmarking are comparable. For setting RIIO-3 the most notable of these being to account for changes in expenditure across networks due to compliance with HSE legislation on fatigue.

Our views on each of the pre-modelling adjustments proposed by Ofgem in the Draft Determination are set out below, in sections corresponding to the three points noted above. Specifically:

- **Section A** – Regional and Company-Specific Factors
- **Section B** – Cost Exclusions
- **Section C** – Other adjustments

We split each of these sections into numbered sub-sections which relate to issues regarding the analysis and decisions contained in the Draft Determination that, in our view, need to change before Ofgem makes its Final Determination.

Section A Our response to Ofgem's proposals on regional and company-specific factors

In general, while we agree with the need to take account of regional and company-specific factors, Ofgem materially errs in decisions made regarding these at Draft Determination. Ofgem's Draft Determination decisions do not reflect relevant regulatory precedent and Ofgem has not properly assessed the evidence presented – leading to a flawed methodology and outcomes which unfairly discriminate against Cadent's networks which serve London.

As discussed in response to GDQ37, we propose that Ofgem sets allowances via a totex model which includes a density driver. This within-model approach captures regional and company-specific factors which cannot be quantified with a bottom-up approach and therefore represents a clearly superior alternative to only making pre-modelling adjustments. However, without any prejudice to that position, if Ofgem does not adopt this proposal, Ofgem should instead apply the regional and company specific proposals discussed below, specifically our Nature of Streets and Network Specific Factors claim. Notably, as discussed in our Business Plan, Ofgem should adopt our Regional Labour Adjustment (RLA) proposal, regardless of whether it uses a density model to set allowances or not.

A.1 Summary of our position on regional and company-specific factors

As explained above, and in response to GDQ37, we propose that Ofgem sets RIIO-GD3 allowances using a totex model which includes a density driver. As explained in our Business Plan, this approach is a "within-model" approach, which involves including a cost driver in the model specification as an explanatory variable to capture the variation in costs associated with exogenous regional cost drivers. Using a within-model approach (density model) avoids the challenges of identifying and quantifying specific factors, assessing their materiality, and accounting for their interactions consistently across regions. Further, this approach allows for the regression to estimate the relationship between the cost driver (in the case of our proposal, network density) and GDNs' level of efficient costs. Hereby, we refer to our proposed within-model proposal as a "density model".

In GDQ37, we explain why Ofgem was wrong to reject our density model proposal to set GDNs allowances. Even if Ofgem is not persuaded – as we think it should be – that a within model approach is a clearly superior alternative to pre-modelling adjustments, and without any prejudice to that position, Ofgem cannot simply ignore the outcome of this analysis as a relevant piece of evidence.

Rather, Ofgem should, in that event, consider such evidence from the density model analysis as a cross-check on its pre-modelling adjustments for density related costs.

However, Ofgem proposes in its RIIO-GD3 Draft Determination to retain its existing RIIO-GD2 approach to pre-modelling adjustments. Given this, we present below our proposals for pre-modelling adjustments which Ofgem should apply to our GDNs, if Ofgem does not accept our proposal to use a density model to set GDNs' allowances. The exception to this is our RLA proposals, which should be applied in Ofgem's model regardless of whether it includes a density variable within the totex model specification. We provide justification for this within our Business Plan.[19]

Below, we conclude that given the evidence we have provided to Ofgem, it would be making an error in its cost assessment methodology if it does not adopt our pre-modelling adjustment proposals (if it also does not rely on a density model to set GDNs' allowances). Therefore, our coherent proposal for Ofgem to address regional differences between the GDNs in its RIIO-GD3 cost assessment methodology is:

- To use a density model to set GDNs' RIIO-GD3 allowances, which will capture exogenous regional cost drivers within the totex model, in addition to applying a regional labour adjustment for the London, Eastern, and Southern GDNs (which recognises both of our proposed improvements)[20];
- If Ofgem does not adopt this, it should apply the following regional and company specific factor proposals:
    - a regional labour adjustment for the London, Eastern, and Southern GDNs (which recognises both of our proposed improvements);
    - the Nature of Streets adjustment for the London, Eastern and Southern GDNs, in place of its current urbanity adjustments;
    - the London GDN Network-Specific Factors claim; and
    - the sparsity adjustment as used at RIIO-GD2 (applied to emergency and repairs costs only).

As shown in the tables below, adopting the latter approach (accepting our regional and company-specific factor proposals and retaining the RIIO-GD2 sparsity adjustment) improves the relative efficiency scores of the GDNs which serve London, and as a result increases our London GDN's RIIO-GD3 allowances by £55m, and our Eastern GDN's RIIO-GD3 allowances by £10m. Hence, failing to adopt this proposal (or our proposal to set allowances using a density model), would result in significantly underfunding GDNs which serve the London region.

[19] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg. 77
[20] Under this approach, when using a network density driver, Ofgem does not need to make any other pre-modelling adjustments, except the Regional Labour Adjustment.

Table 1: Impact of Accepting Our Regional and Company-Specific Factor Proposals vs. the Cadent Error-Corrected DD Model (Efficiency Scores)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Cadent Regional and Company Specific Factors Accepted	
	Efficiency Score	Efficiency Score	Delta to Corrected Model
EoE	0.960	0.958	-0.002
Lon	1.041	1.008	-0.033
NW	1.006	1.013	0.007
WM	0.942	0.949	0.007
NGN	0.961	0.967	0.006
Sc	0.956	0.963	0.006
So	1.033	1.033	0.000
WWU	1.147	1.154	0.008
85th percentile	0.957	0.958	0.002

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3.
Source: Cadent analysis

Table 2: Impact of Accepting Our Regional and Company-Specific Factor Proposals vs. the Cadent Error-Corrected DD Model (£m, 2023/24)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Cadent Regional and Company Specific Factors Accepted	
	Allowance	Allowance	Delta to Corrected Model
EoE	2,129.93	2139.55	9.61
Lon	1,676.67	1731.58	54.91
NW	1,439.22	1433.13	-6.09
WM	1,135.13	1130.12	-5.01
NGN	1,542.63	1536.25	-6.38
Sc	1,091.82	1087.42	-4.40
So	2,438.78	2443.50	4.72
WWU	1,564.09	1557.96	-6.13
Cadent Total	**6,380.96**	**6434.39**	**53.43**
Industry Total	**13,018.28**	**13059.52**	**41.24**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent analysis

Our response to Ofgem's proposals for Regional and Company Specific Factors is structured as follows:

- Section A.2 briefly describes Ofgem's approach to pre-modelling adjustments in the RIIO-GD3 Draft Determination;

- Section A.3 explains why Ofgem was wrong to reject our proposals relating to the regional labour adjustment;
- Section A.4 explains why Ofgem was wrong to reject our Nature of Streets proposal;
- Section A.5 explains why Ofgem was wrong to reject our Network Specific Factors claim; and
- Section A.6 explains why we agree with Ofgem's proposed approach to pre-modelling sparsity adjustments.

A.2 Summary of Ofgem's RIIO-GD3 Draft Determination Approach

In its RIIO-GD3 Draft Determination, Ofgem largely maintained its RIIO-GD2 approach of using pre-modelling adjustments to account for regional and company-specific factors. Specifically, it proposed to make **four adjustments** to network costs to account for regional differences.[21] We discuss each in turn.

In its Draft Determination, Ofgem has proposed to apply a **(1) Regional Labour Adjustment** (RLA) to take account of differences in the level of gross hourly earnings sourced from the ONS' Annual Survey of Hours and Earnings (ASHE) dataset, consistent with its approach at RIIO-GD2. Specifically, Ofgem:

- uses occupational level gross earnings data split by the ONS' Standard Occupational Classification (SOC) definitions and by UK region (according to the 11 International Territorial Level (ITL) Statistical Regions). Ofgem uses 2-Digit SOC definitions to define occupations;
- uses data provided by GDNs on the proportional split of their workforce by 2-Digit SOC definitions to generate the proportions each occupation accounts for of an average 'notional GDN labour force'[22];
- then combines these two sets of data to generate 3 regional wage indices for the notional GDN labour force – one for the London ITL region, one for the "South East" ITL region and one for "elsewhere". Ofgem then rebases them all to the elsewhere index so each measures the extent of difference in wage rates between these areas and elsewhere in the UK; and
- then weights these indices by the proportion of population each GDN serves in each of the three areas to generate a required RLA to normalise labour costs before comparative regression assessment.

The regional labour adjustment is applied to all cost areas, based on the labour proportion of cost per cost area.

Further, in its Draft Determination, Ofgem proposed **two (2 & 3) urbanity regional factors: urbanity productivity and urbanity reinstatement**. These adjustments are intended to capture the increased costs relating to exogenously driven lower labour productivity in some areas and exogenously driven higher reinstatement costs for some GDN activities respectively.

The **urbanity productivity** adjustment is applied to emergency, reinforcement, connections, and repex labour costs, as well as repex plant hire costs, to reflect lower productivity associated with working in London. The adjustment value Ofgem uses for the urbanity productivity adjustment is based on evidence from SGN for the RIIO-GD1 price control. SGN calculated its proposed required adjustment from its own repex productivity data over two operational patches (a London, and a non-London patch).

[21] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.66.
[22] Ofgem have confirmed that in Draft Determinations modelling the latest GDN data on the proportional split of GDNs' workforce is not being used. This, therefore, requires updating for Final Determinations. We have not remedied this error in our Cadent 'error-corrected' Draft Determination model run owing to availability of this data from other GDNs when we had to perform this model run.

The **urbanity reinstatement** adjustment is applied to emergency, repair, maintenance, Other Direct Activities (ODA), and repex activities to account for incremental reinstatement costs. The value of Ofgem's urbanity reinstatement adjustment is based on the RLA, assuming all reinstatement costs are labour.

Lastly, Ofgem's Draft Determination made a **(4) sparsity adjustment** intended to account for higher costs to meet emergency standards when serving sparse populations. Ofgem calculates a sparsity index for each GDN as follows: [23]

- first, Ofgem calculates a sparsity index for each Local Authority (LA) in Great Britain (GB), by taking the ratio of the LA's population density to GB average population density (excluding LAs without gas network coverage) and converting the ratio into a deviation from 1.[24]
- Ofgem assumes that only the areas with a population density below the threshold of GB average density can be considered sparse, and hence adjusts the sparsity index in the previous step to 0 for LAs with a population density greater or equal to the GB average;
- for each GDN, Ofgem separately calculates each LA's share of that GDN's population;[25]
- building on the three steps above, Ofgem then calculates an 'unstandardised' sparsity index for each GDN as the average of LA sparsity indices, weighted by the LAs' share of the GDN's population; and
- finally, Ofgem standardises the GDNs' sparsity indices by imposing an adjustment benchmark of 13% for WWU, and then scaling the other GDNs' 'unstandardised' indices relative to the 13% adjustment applied to WWU.[26]

At Draft Determination, Ofgem also considered **Company-Specific Factor** (CSF) claims submitted by GDNs to reflect material cost elements that Ofgem does not already account for in the above adjustments or its econometric model. Ofgem did not accept any of the CSFs submitted by GDNs for RIIO-GD3.[27]

A.3 Ofgem is wrong to reject our Regional Labour Adjustment proposals in its Draft Determination

In our Business Plan we proposed two improvements to Ofgem's existing methodology, which has been rolled over from RIIO-GD2 (and described above) for the RIIO-GD3 price control:

1. we proposed amending the boundary of the regions accounted for via the RLA as the "South East" ITL region does not recognise all of the areas around London impacted by its labour market; and
2. we noted that Ofgem's approach did not capture exogenously driven differences in labour costs outside of wages captured by the ONS ASHE dataset. One of these relating to Employers' National Insurance Contributions (NIC). We proposed amending Ofgem's approach to take account of the disproportionate Employers NIC costs facing GDNs who operate in high wage regions.

Further details on both of our proposals can be found in Appendix 3 to our Business Plan.[28]

[23] Cadent review of Ofgem's RIIO-GD3 model.
[24] Ofgem uses the following formula: 1 – (LA density/GB average density).
[25] Ofgem uses ONS data for LA population density calculations.
[26] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", p. 118, footnote 55: *"The 13% sparsity benchmark for WWU was based on a comparison with London based on GDPCR1 data."*
[27] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.124.
[28] Specifically, Section 4.2 in Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.

Ofgem's Draft Determination rejects our proposal to amend the boundary of regions receiving a RLA on the basis of several high-level observations made about the data underpinning our analysis. Ofgem also offers no view on whether to accept or reject our proposal to amend the RLA to account for Employers National Insurance Contributions (NIC), only inviting views on our proposal and noting that our proposal was submitted before changes to the Employers NIC regime were announced in the Autumn 2024 Government budget and suggesting that further data is required to assess our proposal.

We address these points in turn below.

A.3.1 Ofgem's critiques of the underlying data used to reject our proposal to amend the boundary of regions which receive Ofgem's RLA are unfounded

In the Draft Determination, Ofgem rejects our proposal to amend the geographical boundary of the area receiving an adjustment to recognise an area Ofgem terms "the East of London" area, which sits across our Eastern and London GDNs on the basis that:

1. "*the proposal is based on general earnings in those counties as more granular, occupational-level data is not available at a local authority level. Cadent has not demonstrated a correlation between general earnings and GDN-specific labour costs*" [29];
2. "*even based on general earnings, the East of London area broadly tracks at, rather than above, the national average"* [30]*;*
3. "*given the differential wage levels among local authority areas included in Cadent's proposal, the case for the proximity to London driving higher wages across the three counties is weak"* [31]; and
4. *"the recent convergence in wage rates further undermines the argument to extend the adjustment beyond London and the South-East."* [32].

In light of Ofgem's comments, we have examined the underlying data we used to justify our proposal and set out the results of our analysis below. As set out in detail, we consider that Ofgem's criticisms are erroneous.

Before addressing the points, however, we think it is important to clarify our proposal. We are not proposing to amend Ofgem's RLA to add a further region for adjustment (as SGN have proposed with proposing that their Scotland GDN should receive an adjustment – which we do not agree with). Instead, we are proposing that the area in and around London which receives an adjustment has its boundaries amended so that it accurately reflects the area impacted by the London labour market in line with Ofgem's previously stated views that there is "*sufficient mobility of labour to mitigate wage differentials throughout GB, however productivity and cost of living factors in London, and to a lesser extent in the South-East, lead to persistent wage inequality*".[33]

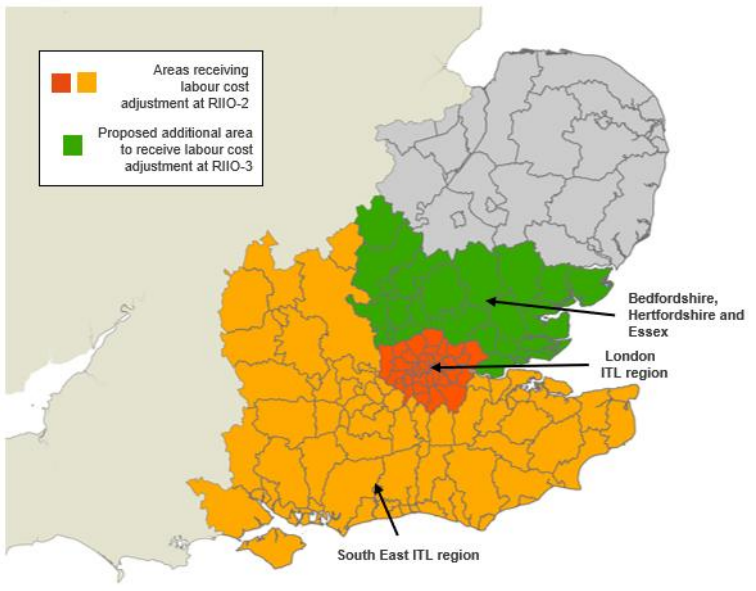
Specifically, we are proposing that the area Ofgem has termed the "East of London area" is included in the region adjusted for. As set out in Appendix 3 to our Business Plan, this area amounts to the counties of Hertfordshire, Bedfordshire and Essex. Extending the RLA to cover this area (shown as green in the Figure below alongside the London and "South East" ITL regions which already receive adjustments) would mean that in totality, the areas receiving an adjustment would reflect the previously used Standard Statistical Region (SSR) known as 'South-East'.

The SSRs were regional geographical areas used by the UK Government from the 1960s to the mid-1990s, that reflected regional and economic planning areas. They were replaced in the mid-1990s by what became ITLs to allow for: (i) the re-organisation of local government in England, Wales and Scotland; (ii) better alignment between areas used for administrative and statistical purposes; and (iii)

[29] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.74.
[30] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.75.
[31] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.75.
[32] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.75.
[33] Ofgem (2022), "RIIO-ED2 Draft Determinations – Core Methodology Document" pg 232

to produce regional areas with more similar populations[34]. The ITL regions are those used by the ONS today for a range of regional statistics.

Figure 1: Proposed areas to receive a RLA for RIIO-GD3



Source: Cadent analysis

As noted in our Cost Assessment and Benchmarking Approach Appendix to our Business Plan[35], the South East SSR better captures the area immediately around London that is affected by London's unique labour market than the London and "South East" ITL regions. Furthermore, the amendment would remedy the current counterintuitive outcomes present within the RLA due to the definition of the "South-East" ITL region. For example, the current RLA implicitly assumes that earnings to the South and West of London are impacted by the London labour market, but not the North and East, and that rural Kent and areas as geographically far away from London as Milton Keynes receive an RLA, but not areas in the green area highlighted above.

A.3.1.1 General earnings data, in fact, is very well correlated with GDN-specific labour costs

Whilst it is true that 'moving' the boundary of the regions receiving Ofgem's RLA requires utilisation of general earnings data (as this is the only available data at the Local Authority level), Ofgem should accept our proposal if we are able to show that:

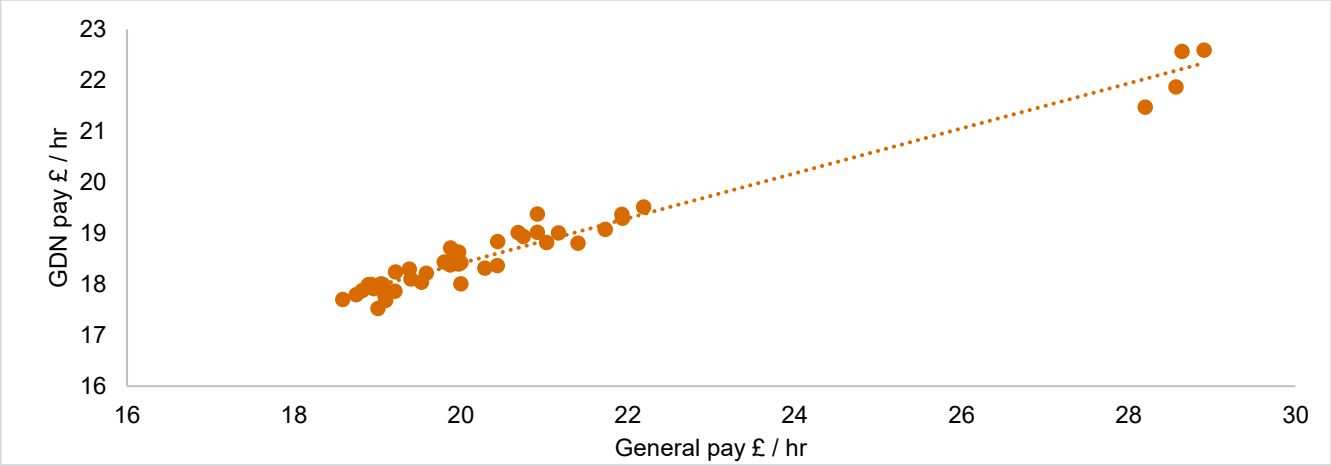
- there is a correlation between general earnings levels and GDN specific labour costs (addressed in this sub-section); and
- general earnings are significantly higher in this area than the national average (addressed in sub-section A.3.1.2 below).

As shown in the figures below, contrary to Ofgem's position in its Draft Determination, there is both a strong positive correlation and a statistically significant relationship between mean gross earnings levels and GDN-specific earning levels. Hence, there is clearly a strong correlation between general earnings and GDN-specific labour costs and Ofgem has erred in using this as justification for rejecting our proposal. Gross earnings levels come from the ONS ASHE dataset as contained in the Ofgem RLA file, using "All occupations" data by region. GDN-specific earning levels are calculated based on Ofgem's RLA over the latest four-year period (2021-24 to encompass all years covered by the

[34] Twigger, R. and Morgan, B. (1997) "*The New Statistical Regions: research paper 97/67*", House of Commons Library, 22 May 1997, see here: New Statistical Regions (parliament.uk) Accessed: 28.12.23
[35] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", section 4.2

SOC2020 period) and is hence based on the ONS data used by Ofgem in its Draft Determination.[36] Both sets of data are uplifted into 2023/24 prices using Ofgem's required inflation indices.

Figure 2: Real General pay vs GDN Specific pay by region: 2021 – 2024 (£/hr, 23/24 prices)



Source: Cadent analysis

Table 3: Real General pay vs GDN Specific pay by region: regression results

Regression Statistics				
Adjusted R Squared	0.963			
Standard Error	0.230			
Observations	44			
Coefficients				
	Coefficients	**Standard Error**	**t Stat**	**P-value**
Intercept	9.59	0.28	34.84	0.0000
General pay	0.44	0.01	33.56	0.0000

Source: Cadent analysis

A.3.1.2 When compared on the same basis, general earnings in "the East of London" area are in fact above the national average

Ofgem also states in its Draft Determination that general earnings in the East of London area are aligned with, rather than above, the national average. However, since 2014, general earnings in the East of London are consistently above the national average, on average 1.43%, before accounting for the additional impact of Employers NIC.

To assess the relationship between general earnings in the East of London area and the national average we have used data from the ONS ASHE general hourly earnings dataset at the Local Authority level. We average the level of pay in each Local Authority within the East of London region over the 11-year period and aggregate these using population shares of each Local Authority to generate an East of London annual average level of earnings. Weighting by Local Authority population

[36] To test the strength of the link between General pay levels and GDN specific labour cost, we have used the DD file GD3_RegionalCostIndices, in particular the tabs Inp_hourly_wages_SOC2020_2dig and Cal_weighted_pay_SOC2020_2dig. We have taken hourly pay levels for each of the eleven regions used by Ofgem, plotting General Pay levels on the X axis against GDN specific pay levels on the Y axis. We have carried out this analysis for the four years from 2021 onwards, for which comparable SOC2020 data is available. We also note by taking this approach we use a consistent method of aggregation for comparing statistics as at the ONS-defined regional level.

data is consistent with Ofgem's approach to converting a regional factor to be applied to a GDN operating area (that only partially operates in the region receiving a regional factor). We then perform the same calculation to calculate a national average earnings figure, including ONS data for the 2.8% of the population within Northern Ireland (consistent with Ofgem's definition of national average), to compare the East of London figure to. We have deliberately not compared the estimated East of London figure to a top-down national average figure as stated in the dataset as it is unclear what method of aggregation the ONS has been used to generate this figure. Therefore, so that the method of aggregation does not distort the results of the analysis we also follow weighting Local Authority data by population to generate a national average figure.

Once the costs of Employers NICs are included in the calculation, since NICs are disproportionately higher for higher pay levels seen in the London labour market[37], the level of excess cost in East of London area increases to 1.48% above the national average. Therefore, the earnings level in the East of London area is above the national average and, Ofgem has erred in using the justification that East of London wages generally track at the national average level to reject our proposal.

A.3.1.3 Differential wage levels among local authority areas included in the East of London are similar to regions which already receive an RLA

Ofgem also states that high differentials in wage levels among Local Authorities within the East of London area weakens our proposal and the case for proximity to London driving higher wages in the area. However, ONS hourly earnings data shows that Local Authority pay levels and differentials in the East of London area are analogous to Local Authority earning differentials within the South East region, which Ofgem does apply an RLA to already:

- the median pay level by Local Authority in each area is almost identical (1.7% different);
- the South East ITL region has 41% of Local Authorities with pay below the national average, which is comparable to 43% for the East of London area (even in the highest paid region of London, a significant proportion of Local Authorities (10%) have average pay levels below the national average); and
- the South East ITL region has a wider dispersion of pay around the national average than the East of London area. Its highest paid Local Authority has pay levels 40% above the national average, as compared to 26% in the East of London area. However, the South East ITL region's lowest paid Local Authority has pay levels 21% below the national average, as compared to 16% in the East of London area.

It is also important to note that the data shows the East of London area region is very different from the "elsewhere" region (that it is included within under Ofgem's current RLA adjustment), which does not receive an RLA. Whilst (as noted above) the East of London region has 43% of Local Authorities with pay below the national average, the "elsewhere" region has 81% of Local Authorities with pay below the national average.

As a result, Ofgem's argument that the case for our proposal is weakened by Local Authority pay differentials within the East of London area is unfounded and discriminatory, with the area being very similar to South East ITL region for which Ofgem applies a RLA to within its modelling. To not also apply an RLA to the East of London area would therefore be an error and inconsistent with Ofgem's wider approach to the RLA.

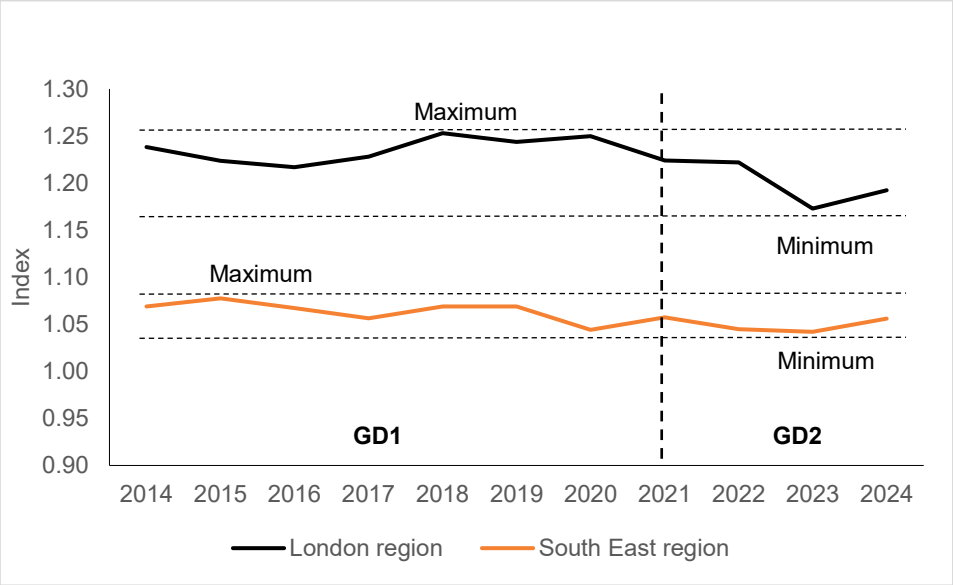
[37] See Section 4.2 in Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.

A.3.1.4 Ofgem's statement that a convergence in wage rates undermines our proposal is both incorrect in fact and irrelevant

Ofgem states "*that the recent convergence in wage rates further undermines the argument to extend the adjustment beyond London and the South-East*" [38]. This suggestion is both factually inaccurate and irrelevant to whether our proposal should be accepted or not.

Firstly, as shown in the Figure below, the regional wage indices (i.e. the GDN-specific level of earnings calculated by Ofgem relative to the national average) for the London region and the South East ITL region, as calculated in the Draft Determination, have not converged recently. Indeed, the disparity in earnings levels between London and the South East, compared to elsewhere (which equals the value 1), has remained broadly stable over time. Whilst the wage premia for both regions hit a minimum in 2023, they both rose again in the most recent years' data from 2024, by 2.0% for London, and 1.4% for South-East. Hence, Ofgem's statement that there is convergence in wage rates is unfounded – convergence, or anything close to it has not occurred.

Figure 3: Draft Determination regional wage indicies over time



Source: Cadent analysis

Secondly, notwithstanding that there is no evidence of convergence in wage rates, this observation is irrelevant to our proposal. So long as their remains a significant difference in earnings levels in and around London to elsewhere an adjustment is still required. This remains the case based on our Business Plan and the updated data underpinning Ofgem's RLA.

Therefore, in light of these two points, this final argument made by Ofgem is also an error and does not provide any justification for rejecting our proposal.

A.3.2 Ofgem offers no view on whether to accept our Employers NIC amendment to the RLA. Adopting our proposal requires no further information.

While we support Ofgem seeking views on the principle of making an adjustment for Employers NICs in line with our Business Plan proposals, we do not believe that Ofgem would either need to work with GDNs to explore the issue or require a separate data collection exercise to reflect the impacts following the Autumn 2024 Budget changes (as indicated in its Draft Determination).

[38] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.75.

A.3.2.1 A further data collection exercise is not required to implement our proposal

In principle, the differential impact of Employers NICs between GDNs should be reflected in the RLA, as an unavoidable cost to the employer. The RLA is based on a notional GDN labour force, assuming they are direct employees (i.e. not contractor labour). As a result, to be consistent with a notional approach our NIC proposal should be adopted as these are unavoidable costs the notional GDN would face.

Furthermore, in practice, to reflect this in the RLA calculation requires no additional data from GDNs given that we (as part of our Business Plan and via supplementary submissions) have set out the process for Ofgem to make amendments to its files and shared spreadsheets to explain this. These files also set out the tax rates and thresholds above which Employer NICs is payable which are also required for the calculation.

The only changes required to the existing calculation of the RLA are to convert data for hourly pay into annual pay, such that when calculating the additional cost of Employers NIC, the annual tax-free threshold can be applied. The assumption on the number of hours worked per year must be common across GDNs and can be calculated using the ONS ASHE data for GDN labour by comparing the rates of hourly pay already used in the calculation with ONS' data on analogous levels of annual pay for those occupations – as explained in our Business Plan, through the engagement with Ofgem on this topic and as shown in supplementary submissions we have made to Ofgem.

A.3.2.2 The change in the Employers NIC regime from the Autumn 2024 Government budget is irrelevant in benchmarking, unless Ofgem updates its Cost Assessment approach to take account of the extra costs placed on GDNs via a pre-modelling adjustment

All GDNs' BPDTs were submitted less than six weeks after the Autumn 2024 budget, and in the run up to submission Ofgem and all GDNs agreed at the Cost assessment Working group (CAWG) that there was insufficient time for any GDN to be able to reflect the changes in the Business Plan submissions. However, it was noted that as the changes in the Budget placed further unavoidable costs on GDNs, they would need to be incorporated into the cost assessment approach at a later date. See our response to GDQ37, which sets out the impact of the Budget on costs across our networks due to changes in the Employers NIC regime in Autumn 2024 and our proposed solution to incorporate these additional costs in allowances for Final Determination via a *post-modelling adjustment*.

Should the additional costs noted above be added as a post-regression modelling adjustment as proposed in our response to GDQ37 – which we consider to be the most theoretically sound and most practical approach – then the Budget changes would not need to be reflected in our proposed amendment of the RLA to take account of additional Employers NIC and all the figures and analysis we have provided to Ofgem to date, should be utilised to improve its RLA. If Ofgem, however, instead chose to reflect the increased cost from the Budget as a pre-modelling adjustment, then our proposed amendment of the RLA for National Insurance Contributions would need to be updated so the RLA would be consistent with costs it is applied to. We have all information (e.g., relevant threshold and NIC rates) to do this, which can be provided on request.

Ofgem therefore has all of the information it requires to properly take into account Employers' NIC in its RLA in line with our proposal in the Final Determination.

A.3.3 We agree with all other aspects of Ofgem's calculation of the Regional Labour Adjustment in its Draft Determinations (except for the rejection of our proposals on regional boundaries, and the omission of NIC)

Despite the errors in Ofgem's RLA discussed above, we agree with other methodological decisions taken by Ofgem at Draft Determination.

Specifically:

- Consistent with the view set out in our Plan, and precedent from RIIO-ED2, we agree that the RLA should be applied to the area around London only i.e. London region and South-East region – with the definition refined to form the South-East Standard Statistical Region in total (as set out above). In contrast, Scotland is not reliant on the same labour market as London and therefore does not merit an RLA (as proposed by SGN).[39]

- Ofgem states that it intends to use 2-digit SOC codes within the calculation of the regional labour adjustment. We support this approach, because, as stated by Ofgem, it provides a balance between granularity of data and robust sample sizes. As stated in our Plan, although the more granular SOC codes can be more closely aligned with individual jobs in specific industries, they are subject to more data quality issues. For example, we note that Ofgem needed to ask the GDNs to resubmit SOC code data on the composition of their labour forces, because we had all taken very different approaches to assigning roles to SOC codes. Although the revised data was omitted from the Draft Determination in error, we believe it likely that differences between GDNs will remain, and which will be more pronounced at the 3-digit, rather than 2-digit level, highlighting some of the data problems associated with 3-digit SOC codes.

- We agree with Ofgem's approach of calculating the RLA on the basis of the most recent five years' historical data. When selecting the period over which averaging should occur, it is important that the answer should provide a broadly representative view with this being a long-term regional adjustment and not be distorted significantly by outliers. At RIIO-GD3, we consider that 2023 represents an outlier year, with the figure for London region of 1.173 well below that for any previous year – the next lowest being 1.217 in 2016 - in the period since 2014, and as compared to 1.192 in 2024. As a result, the five-year average is required to provide a representative view.

A.3.4 A summary of our coherent proposal for Ofgem's Regional Labour Adjustment

In summary, we propose that Ofgem's Final Determination RLA is calculated as follows:

- broadly following the same approach as used at RIIO-GD2 (including only applying the RLA for GDNs which rely on the labour market in London and its surrounding areas, using 2-digit SOC code data, and a 5-year averaging period)[40]; and

- correcting the two errors in Ofgem's methodology, as proposed in our business plan, namely, correcting the boundaries of the RLA to include the East of London area and including Employers NIC within the RLA calculation.

In the Tables below we show the impact of accepting this coherent proposal on GDNs' efficiency scores and allowances, compared to the Cadent Error-Corrected Draft Determination model.

[39] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", section 4.2

[40] Having updated labour composition data used in the RLA that was provided by GDNs after Business Plan submission, that was not included in error in the Draft Determination

Table 4: Impact of Accepting Our RLA proposals vs. the Cadent Error-Corrected Model (Efficiency Scores)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Our RLA Proposals	
	Efficiency Score	Efficiency Score	Delta to Corrected Model
EoE	0.960	0.958	-0.002
Lon	1.041	1.033	-0.007
NW	1.006	1.009	0.002
WM	0.942	0.943	0.001
NGN	0.961	0.963	0.002
Sc	0.956	0.957	0.001
So	1.033	1.033	0.000
WWU	1.147	1.149	0.003
85th percentile	0.957	0.957	0.000

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3.
Source: Cadent analysis

Table 5: Impact of Accepting Our RLA proposals vs. the Cadent Error-Corrected Model (£m, 2023/24)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Our RLA Proposals	
	Allowance	Allowance	Delta to Corrected Model
EoE	2,129.93	2134.51	4.57
Lon	1,676.67	1687.00	10.33
NW	1,439.22	1435.85	-3.37
WM	1,135.13	1133.49	-1.64
NGN	1,542.63	1538.27	-4.36
Sc	1,091.82	1090.90	-0.93
So	2,438.78	2437.46	-1.32
WWU	1,564.09	1560.31	-3.78
Cadent Total	**6,380.96**	**6390.85**	**9.90**
Industry Total	**13,018.28**	**13017.79**	**-0.50**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent analysis

A.4 Ofgem's is wrong to reject our Nature of Streets proposal in its Draft Determination

The Draft Determination unduly discriminates against Cadent through a material error in rejecting our Nature of Streets proposal. We explain below why this decision is an error and how Ofgem should remedy this for its Final Determination.

A.4.1 Introduction

Ofgem recognises that networks which serve London face higher costs from operating in a dense, urban environment than non-London networks. In setting the RIIO-GD1, and RIIO-GD2 price controls Ofgem has applied a set of urbanity adjustments to account for additional labour, plant hire, and reinstatement costs that London networks are required to incur.

Ofgem's adjustments, however, only account for a subset of the total density-related cost impact that networks operating in London face. In our RIIO-GD3 Business Plan, we outlined two means by which Ofgem could account for the true, additional costs we incur from operating in a dense, urban environment:

- a set of pre-modelling regional and company-specific factors to normalise network costs for comparative benchmarking, which are an evolution of Ofgem's approach at RIIO-GD2 (we discuss this proposal in our response to this consultation question);[41] and
- a within-model density variable to quantify the relationship between network costs and density/sparsity (we discuss this proposal and why it is the superior option in our response to GDQ37).[42]

Our pre-modelling adjustment proposal is comprised of two separate elements to account for density factors:

- The first element is a Nature of Streets (NoS) adjustment that accounts for the additional cost we incur when working with assets that are located underground. The NoS adjustment would replace Ofgem's existing urbanity productivity and urbanity reinstatement adjustments.
- The second element is a Company-Specific Factor (CSF) claim that accounts for the additional, density-related costs we incur, that are not covered by NoS.

The additional cost elements we include in our NoS and CSF claim directly result from the same factor: the cost of operating in a dense, urban environment. However, our quantification approach ensures that there is no overlap in the cost adjustment for our NoS and CSF claims. These claims are therefore additive, and collectively account for the additional cost we incur, and have been able to quantify via pre-modelling adjustments. Furthermore, these claims are conservative as there are likely to be cost differences driven by density that cannot be observed and quantified – a statement corroborated by analysis in Appendix 3 to our Business Plan which we have updated for the full 18 years of data in our response to GDQ37.[43]

[41] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", section 4.3
[42] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", section 5.2
[43] In our Business Plan, Appendix 3: Cost Assessment and Benchmarking Approach, P. 82-83, we provide details and the results of a cross-check on the size of our regional and company-specific factor proposals. Specifically, we compared regression results of our preferred totex regression model including a density driver (with only the Regional Labour Adjustment applied as a pre-modelling adjustment) and a second model of the same form, but with our NoS and CSF claim applied along with the Regional Labour Adjustment. We have re-run this analysis with the full 18 years of network cost and driver data, and find that, between these model runs, the coefficient on density reduces in size (as the pre modelling adjustments for NoS and our CSF claim accounts for some density related cost impacts), but the resulting coefficient remains statistically significant at the 5% level, and greater than zero. This indicates that there are further incremental density related cost impacts that our proposed NoS and CSF adjustments do not account for.

In its Draft Determination, Ofgem rejected our proposed adjustments, and proposes instead to retain its RIIO-GD2 approach to account for density factors. Specifically, it would account for density-related costs with the following adjustment factors:

- an **urbanity productivity** adjustment applied to emergency, reinforcement, connections, and repex labour costs, as well as repex plant hire costs, to reflect lower productivity associated with working in London; and
- an **urbanity reinstatement** adjustment applied to emergency, repair, maintenance, Other Direct Activities (ODA), and repex activities to account for incremental reinstatement costs.

Ofgem does not provide specific, detailed analysis of the evidence we submitted for our NoS and CSF claims in our Business Plan and how it has assessed our proposals, only offering two high-level overall reasons for its decision to retain its RIIO-GD2 approach:[44]

1. "*Productivity and reinstatement factors, as recognised in RIIO-GD1 and RIIO-GD2, are still relevant drivers of additional costs for GDNs operating in urban areas*";
2. "*A pre-modelling adjustment is the most appropriate method for accounting for urbanity. It is conceptually simple and the productivity differential assumption is supported by multiple sources of analyses. This approach also avoids potential interpretation and data reliability issues compared with adding an explanatory variable term (e.g. density factor) into our model*".

On point (1), we agree with Ofgem that these factors are still relevant cost drivers at RIIO-GD2 in principle. However, we discuss below why we believe the continued use of Ofgem's RIIO-GD2 approach to quantify these factors constitutes a material error in approach compared to our Business Plan proposals. In summary:

- we discuss why Ofgem's failure to replace its existing urbanity adjustments with our proposed NoS adjustment ignores recent regulatory precedent on a directly analogous adjustment made at RIIO-ED2;
- we discuss why Ofgem's existing urbanity adjustments are unlikely to reflect the true level of additional cost networks incur when constructing and maintaining underground network assets in London due to methodological and calculation errors; and
- we explain that our proposed NoS adjustment is based on more recent and reliable evidence than Ofgem's proposed approach. We also demonstrate that, if Ofgem were to remedy methodological errors in its existing urbanity adjustments, the total adjustment value would imply would be higher than the NoS approach we propose in our Business Plan; and
- lastly, we show the impact of accepting our proposed NoS approach on GDNs' efficiency scores and RIIO-GD3 allowances.

Point (2) refers to the choice between the use of density as a cost driver for a within-model adjustment, and the use of pre-modelling adjustments. We respond to Ofgem's position to apply pre-modelling adjustments only instead of a within-model density driver in response to GDQ37. As discussed in our response to GDQ37, we propose that Ofgem sets allowances via a totex model which includes a density driver. This within-model approach captures regional and company-specific factors which cannot be quantified with a bottom-up approach and therefore represents a clearly superior alternative to make pre-modelling adjustments. Without prejudice to this position, should Ofgem proceed to use only pre-modelling adjustments, it should cross-validate network allowances with the density model.

Ofgem also sets out a number of brief reasons for rejecting our NoS[45] and CSF[46] claims which we address in the sections below where relevant.

[44] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.95.
[45] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", paras 5.102 and 5.103.
[46] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", paras 5.127 and 5.129.

A.4.2 Ofgem's approach is inconsistent and unduly discriminatory between the methods used to control for London-related costs in RIIO-ED2 and RIIO-GD3

In our Business Plan, we proposed a NoS adjustment to replace Ofgem's existing urbanity adjustments.[47] Our proposed NoS adjustment is a simple, single adjustment to account for the additional costs we incur to construct and maintain assets located under the street surface in London, as compared to GDNs operating elsewhere.

The NoS adjustment relies on recent evidence from the Understanding Baseline Level of Efficiency in London (UBLE) report, which uses data from Cadent and SGN to estimate a productivity differential between London and non-London regions. In our Business Plan, we provide a full discussion of the NoS evidence, our proposed quantification, and subsequent analysis using internal data to cross-validate the adjustment[48]

At RIIO-ED2, Ofgem applied a directly analogous NoS adjustment to account for additional costs DNOs incur when excavating and reinstating streets in London (as proposed by UKPN).[49] Ofgem's NoS adjustment at RIIO-ED2 relied on identical evidence from gas networks, contained within the UBLE report, which underpins our NoS adjustment.

In its RIIO-GD3 Draft Determination, Ofgem recognised that it accepted the NoS adjustment for RIIO-ED2, but stated that it proposed to reject our equivalent proposal for RIIO-GD3 since there is "*an existing, well-established methodology for urbanity adjustments for the Gas Distribution sector*".[50] Ofgem did not offer any further rationale as to why a NoS adjustment, which is based on workload evidence from gas networks, might be acceptable for electricity networks which Ofgem regulates under RIIO-ED, and not gas networks it regulates under RIIO-GD. In the absence of further explanation, Ofgem's decision can only be construed as irrational and a clear error in the approach taken.

Furthermore, it cannot be right that the presence of an existing methodology for urbanity adjustments is a sufficient reason to reject an alternative approach, particularly when the alternative is based on more recent, more reliable evidence, and is hence clearly superior.

A.4.3 Ofgem's existing urbanity adjustments contain significant computational and methodological errors and do not reflect the true cost of underground work in London

As noted above, in its Draft Determinations, Ofgem proposes to retain its existing urbanity adjustments for RIIO-GD3. The existing urbanity adjustments rely on evidence and assumptions that Ofgem has applied to London networks' costs since RIIO-GD1 (which is now over a decade old).

Ofgem's **urbanity productivity** adjustment *supposedly* accounts for the additional labour costs associated with underground work, due to a 15% lower productivity difference in the London region.[51] The 15% productivity value is based on SGN repex productivity estimates across two patches in its Southern network: a London patch (Greenwich) and a non-London patch (Charing). SGN's evidence, used data from 2009 to 2011. The elements of the cost base that Ofgem applies the urbanity productivity to has changed over time:

[47] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.45-51.
[48] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.45-51.
[49] See: Ofgem (2022), "RIIO-ED2 Draft Determinations – Core Methodology Document", para. 7.52-53
[50] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.102.
[51] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.91.

- For RIIO-GD1, the first time Ofgem applied the adjustment, it applied it to the labour cost element of connections, reinforcement, and repex activities undertaken by networks in London.[52]
- For RIIO-GD2, in response to our CSF claims, Ofgem extended the adjustment to also cover:
    - Repex plant hire costs for the London and Southern GDNs.[53] This was based on additional evidence we provided, with the logic accepted that lower labour productivity also resulted in the need for more complementary plant over a longer number of hours.
    - Emergency labour costs to account for longer Emergency Job Times (EJTs), based on evidence we provided on additional costs we incur due to longer EJTs in London.[54]

We discuss below how Ofgem has not applied this 15% figure consistently to capture the cost categories affected by the unique challenges of underground working in London (Error 1) and has also misinterpreted SGN's evidence in its urbanity productivity adjustment (Error 2). In addition, we discuss why Ofgem's productivity adjustment does not fully compensate us for the additional costs we incur in London due to higher EJTs (Error 3).

Finally, Ofgem's **urbanity reinstatement** adjustment accounts for the additional reinstatement costs associated with working in highly dense, urban areas.[55] Ofgem treats networks' reinstatement costs entirely as a labour cost and adjusts for additional costs using its RLA index. We describe below why the RLA is unlikely to accurately measure the additional reinstatement costs London networks incur due to urbanity (Error 4).

Error 1: Ofgem does not consistently apply its urbanity adjustments across networks and activities

As we describe above, both of Ofgem's urbanity adjustments account for the additional costs we face from the same underlying type of activity: excavating and reinstating streets and underground working to construct and maintain underground assets in London. Despite this, Ofgem does not consistently apply its adjustments to all cost and activity types affected by these factors. Ofgem offers no logical reason for only applying one of the urbanity productivity or urbanity reinstatement adjustments to any single cost area and not the other. They both capture separate impacts on the costs of underground working in London, and reflect distinct and inseparable drivers of our costs, which are unique to the London area.

In our Business Plan, we suggested remedies to the inconsistencies within Ofgem's urbanity adjustments at GD2, were Ofgem to persist with their use:[56]

- Connections and reinforcement activities require underground working, reinstatement, and plant hire. Ofgem's framework accepts the impact on the productivity of connections and reinforcement *labour* costs but ignores the extra plant and equipment costs that will be needed to complement the extra labour needed in connections, due to lower productivity in London. Our Business Plan argued that, for consistency, Ofgem should extend its plant hire adjustment to connection and reinforcement activities, following similar logic that it applied to repex plant hire at RIIO-GD2.
- For the same reason, logical consistency requires that the reinstatement adjustment should apply, not only to opex and repex as at GD2, but also to connections and reinforcement activities. Both connections and reinforcement receive an urbanity productivity adjustment for the additional labour cost involved in underground working. However, underground work for connections and reinforcement is also associated with additional reinstatement costs in London, which Ofgem does not account for.

[52] Ofgem (2012) "RIIO-GD1 Initial Proposals – Cost efficiency: Appendix 5", para. 1.12-13.
[53] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.94-99.
[54] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", paras. 3.85-91.
[55] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.92.
[56] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.49-50.

We also noted that our EoE GDN logically should receive all urbanity-related adjustments, proportional to the area of the London ITL it covers. For RIIO-GD2, Ofgem applied each of its urbanity-related adjustments to EoE, except for the repex plant hire and repex reinstatement adjustments. There is no logical reason that EoE should not also receive equivalent urbanity adjustments to its other cost areas consistent with this.

As part of our Draft Determinations Response (see Annex GDQ36 – 1), we set out up-to-date proportions of plant hire and reinstatement costs for connections, reinforcement and repex activities for our Eastern and London networks, so that should Ofgem continue to utilise its flawed approach to urbanity adjustments, the above errors can be remedied. Our primary position, however, if for Ofgem to apply our NoS adjustment as this addresses the inconsistencies noted above in Ofgem's GD2 approach in a simple way. Our NoS proposal adjusts London networks' costs across four activities (repair, connections, reinforcement, and repex) where costs are demonstrably higher due to working underground in a dense, urban environment in their totality by a single amount.[57] Our proposal therefore remedies an error within Ofgem's GD2 approach, which it maintained in its RIIO-GD3 Draft Determination.

We show the impact of correcting this error in Section A.4.5 below.

Error 2: Ofgem fails to correctly apply SGN's RIIO-GD1 evidence in its urbanity productivity adjustment

As we discuss above, Ofgem's Draft Determination proposes to retain its urbanity productivity approach to adjusting emergency, connections, reinforcement, and repex labour costs, as well as repex plant hire costs by a 15% lower productivity factor.

Ofgem's 15% productivity factor originates from analysis that SGN completed prior to RIIO-GD1, and which Ofgem applied in its urbanity productivity adjustments at both RIIO-GD1, and RIIO-GD2. We have engaged with SGN and reviewed the urbanity productivity evidence which SGN attached to its RIIO-GD1 Business Plan following Ofgem's RIIO-GD3 Draft Determination.

Ofgem applies the urbanity productivity adjustment by (1) weighting the 15% productivity factor according to each GDN's coverage of London, and (2) applying the weighted productivity factor as a direct adjustment index to each network's labour costs. For example, the London GDN covers 75% of the London region, so Ofgem applies an urbanity productivity adjustment to its costs as $1 + (0.15 \times 0.75) = 1.113$.

Ofgem makes two errors in the way that it applies evidence from SGN's in its urbanity productivity adjustment:

1. **Ofgem applies a productivity differential that is outside of SGN's range:** In its analysis, SGN found that, depending on the time of year, there was a "*minimum annual productivity differential of 15.5%, rising to a maximum of 19.6%*" between London and non-London regions.[58] Ofgem incorrectly uses a productivity factor of 15% in its urbanity productivity adjustment, which is outside the range SGN estimated. At RIIO-GD1, Ofgem stated that it would take the minimum productivity factor from SGN's evidence, since an efficient network would minimise the productivity effects it experiences.[59] Even taking this reasoning at face value, Ofgem has made a clear error and should therefore apply a productivity factor of at least 15.5% (not 15%) if it intends to accurately continue to apply its RIIO-GD1 and GD2 approach.
2. **Ofgem incorrectly adjusts networks' costs in direct proportion to the productivity factor:** A network that experiences labour productivity that is 15.5% lower (i.e., assuming for this illustration a network that covers the whole London region), requires an additional 18.3% in labour hours to

[57] We note that Ofgem's existing adjustments also recognise the need for an urbanity reinstatement adjustment for repair work, but do not apply the urbanity productivity adjustment. Ofgem offers no logical explanation for this and it stands in contrast to our NoS proposal. We address this below in our response to this question.
[58] SGN, RIIO-GD1 Business Plan: Evidence for regional productivity differences.
[59] Ofgem (2012) "RIIO-GD1 Initial Proposals – Cost efficiency: Appendix 5", para. 1.12-13.

complete an otherwise identical scope of work outside of London.[60] Ofgem should therefore adjust the relevant labour costs for London networks by 18.3% to reach the level of cost the network would incur if it did not experience urbanity productivity effects, not by 15.5%. As a result, the equivalent value to applied to the factor of 1.113 above would be 1.1375% In Annex GDQ36 – 2, we use a worked example to demonstrate the logic and mathematical basis for this conclusion, and the remedy we propose to account for this.

Furthermore, as an additional overarching point as regards this Error, we note that in responses to DDQs submitted by us to Ofgem (Cadent DDQ033 and Cadent DDQ054) over the consultation period, Ofgem clarified that it has in fact not reviewed or re-examined the underlying evidence that it continues to rely on to support its proposed approach as regards its urbanity productivity adjustment. Indeed, Ofgem subsequently clarified in response to a request from us that it was "*unable to locate the requested evidence on our systems in the time available*."[61] This is despite the Draft Determinations stating that "*We set the 1.15 productivity value based on evidence from two GDNs at RIIO-GD1. We reviewed this assumption at RIIO-GD2 and considered it to still be appropriate*."[62] As we have set out above, in our view, Ofgem has made material errors in respect of how it has applied this evidence in the Draft Determination. It is, therefore, imperative that Ofgem properly reviews and re-examines it in the context of RIIO-GD3 and, in particular, our arguments set out above. A failure to do so on the part of Ofgem would be irrational and represent a serious error in the Final Determination.

We show the impact of correcting this error in Section A.4.5 below.

Error 3: Ofgem incorrectly assumes comparatively high emergency costs are covered by its urbanity productivity adjustment

At RIIO-GD2, Ofgem extended its urbanity productivity adjustment to cover emergency costs based on our CSF claim for additional costs we incur based on Emergency Job Times (EJTs). However, this is not the right approach to account for the additional costs we incur as a result of EJTs and propose that at RIIO-GD3 this is accounted for through our Network-Specific Factors claim, as opposed to via a productivity adjustment.

In our claim at RIIO-GD2, we requested an adjustment to account for the fact that emergency interventions (in the event of gas escapes) take additional time to undertake in London, due high population density. For instance, a gas escape in a large block of flats can affect multiple properties at once, and hence a network with more of these types of buildings will necessarily lead to longer emergency times.[63]

Ofgem noted that our CSF claim for EJTs was material and that "*emergency job times might be longer in denser areas*".[64] It subsequently approved the need for an adjustment to take account of this in its RIIO-GD2 Final Determination, but contested the magnitude of the impact since:[65]

- "*Labour costs should have been deflated using London's labour index to avoid double counting with the labour adjustment*";
- "*Longer job times may be partly caused by inefficiency*"; and
- "*Cadent's analysis only compares the additional cost incurred by London GDN relative to other Cadent networks rather than all other GDNs*".

Ofgem instead assumed that its urbanity productivity measure was an appropriate adjustment index, since additional emergency work in London was "*related to lower productivity for emergency work*

[60] We calculate 18.3% as: 1 / (1 – 0.155) = 1.183
[61] Ofgem response to Cadent DDQ54, 19th August 2025
[62] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.96.
[63] Cadent (2020), "RIIO2 Draft Determination Consultation Response: Gas Distribution Questions", GDQ29, p.122.
[64] Ofgem (2020), "RIIO-2 Draft Determinations – RIIO-GD2: Regional and Company Specific Factors Annex", para 1.66.
[65] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.89.

conducted in more urban areas".[66] As we describe above, for RIIO-GD3 Ofgem proposes to continue adjusting for additional emergency costs in London using its 15% urbanity productivity index.

Ofgem's approach makes a strong assumption, that the productivity loss associated with underground working in London is the same as the productivity loss associated with EJTs. This assumption is both unsupported and incorrect.

The productivity loss we experience on EJTs also relates to the dense, urban operating environment, but affects the cost we incur in a different manner to underground working activities. EJTs involve responding to callouts, interacting with customers who have identified gas leaks, and making safe any issues identified. Longer job times are driven by the need to check a larger number of densely located properties. Underground working, by contrast, involves the excavation and reinstatement of streets, and underground working to maintain, install or replace gas infrastructure, and the higher efficient cost in urban locations is driven by the underground working conditions faced and the nature, quality and cost of materials to be excavated and reinstated. It is for this reason that we instead include this as an element of our CSF claim. Longer EJTs are but one of a number of consequential impacts on our activities and costs from the common underlying drivers of population and property density, outside of the precise impacts captured through either our NoS proposal or Ofgem's urbanity adjustments.

Ofgem also ignores new evidence, set out in our RIIO-GD3 Business Plan, to show that EJTs in our London network are approximately 21.6%, and 14.2% higher for external escapes and internal escapes respectively, compared to Cadent's non-London GDNs.[67] Ofgem does not respond to our new evidence in its Draft Determination, and instead applies its GD2 assumption without demonstrating its appropriateness in this case.

Our evidence at RIIO-GD3 specifically addresses Ofgem's criticisms from RIIO-GD2:

- We discuss in our Business Plan how we quantify the additional cost we incur on EJTs as 16.6% of our gross, normalised cost labour cost for the emergency activity.[68] As a result, by calculating an adjustment to be applied to normalised labour costs, we avoid any double counting with Ofgem's RLA.
- We also provide evidence to substantiate why the additional cost we incur on EJTs in London is unlikely to be related to inefficiency. Specifically, we consider:[69]
    - the requirement that we inspect all properties within 15 metres (horizontally and vertically) of an escape;
    - data on the housing stock across regions of GB that shows the London housing stock is composed of 71% high density housing (i.e., flats), while the next highest region has only 37%;
    - the positive relationship between job times and population density among patches within our network; and
    - how we remove the additional time spent by FCOs in London waiting for repair teams to arrive from the productivity differential, as we could not demonstrate this was outside management control.

Ofgem, however, offers no evidence to support its assertion that the difference between our costs for attending emergencies in London as compared to elsewhere are caused (even in part) by operational inefficiency.

In summary, Ofgem has erred in finding that its urbanity productivity cost index is more appropriate to account for the additional emergency cost we incur, than the element of the CSF claim we propose:

[66] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", paras. 3.90-91.
[67] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.61-62.
[68] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.61-62.
[69] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.53-55.

- The adjustment Ofgem propose to apply to emergency costs is based on a loss in productivity, but for a markedly different underlying cause. As noted above, Ofgem's 15% productivity adjustment was originally developed for RIIO-GD1 based on evidence from SGN on the extra costs that it incurs in London for underground working as part of its repex programme.
- While this 15% assumption is itself an understatement,[70] it is also not computed from any analysis of emergency cost data. As such, there is no basis for Ofgem's suggestion that this productivity adjustment is sufficient to control for the additional costs Cadent incurs in this cost category relative to GDNs in other parts of the country.

Given this, we propose that Ofgem accepts our CSF claim, instead of accounting for EJTs via its urbanity productivity adjustment.

Error 4: There is no engineering or economic rationale for using the RLA to calculate additional reinstatement costs

In its original decision from RIIO-GD1, Ofgem stated that it would apply the urbanity reinstatement adjustment to "*recognise productivity losses associated with reinstatement and transport activities*".[71] To apply the adjustment, Ofgem stated that it would "*treat reinstatement costs as 100% contract labour, to compensate for the transport costs which we excluded from other adjustments*".[72]

To our knowledge, Ofgem has not provided any further rationale as to why its RLA is an appropriate measure to adjust for the additional reinstatement costs that London networks incur. Furthermore, the RLA (as currently defined by Ofgem in the Draft Determination) is an index of wages – i.e. labour prices – so this adjustment reflects a price effect and bears no resemblance to a productivity loss, as noted by Ofgem.

As we noted in our Business Plan, Ofgem is incorrect to assume that all reinstatement expenditure is labour.[73] In reality, reinstatement costs across opex, capex, and repex activities do not comprise only labour, but also materials, transport, and plant elements. We describe in our Business Plan some of the factors driving additional reinstatement costs in London, including asset location, carriageway surface types, type of road structure, and utility asset congestion.[74] The UBLE report, as well as cross checks we completed internally (discussed below), confirmed that reinstatement costs are higher in London. However, this London uplift for reinstatement costs bears no relationship with Ofgem's RLA.[75]

Under our NoS proposal, the adjustment for additional reinstatement costs that London networks incur would be underpinned by estimates of the true regional cost difference and be based on productivity losses – Ofgem's original intent for the adjustment, which it has failed to execute in applying the RLA.

Given this (and the other errors noted above), we propose that Ofgem instead should accept our NoS claim, alongside our CSF claim.

A.4.4 To correct for these errors, the simplest and superior approach would be for Ofgem to accept our Nature of Streets proposal, alongside accepting our Company-Specific Factor claim

By failing to use the NoS approach to adjust for additional density-related costs that networks incur in London, Ofgem directly ignores a more recent and reliable evidence base for its urbanity adjustment, as well as precedent set from RIIO-ED2. In particular, the UBLE report quantifies the additional costs

[70] See: Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.61-62.
[71] Ofgem (2012) "RIIO-GD1 Final Proposals – Cost efficiency", para. 2.17.
[72] Ofgem (2012) "RIIO-GD1 Final Proposals – Cost efficiency", para. 2.17.
[73] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", p.48.
[74] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pp.45-47.
[75] Ofgem's RLA accounts for differences in regional labour cost across networks. We therefore discount regional labour cost differences from NoS, and the internal cross checks we perform on reinstatement costs.

that gas networks operating in London incur to excavate and reinstate streets for underground work (which we have supplemented this with by providing additional evidence since RIIO-GD2).

In our Business Plan, we outline the key evidence in support of our NoS proposal (including from the UBLE report) and propose a single adjustment that would account for the additional cost we incur from working with underground assets in London.[76] We do not cover the evidence from the UBLE report in detail in this response, but this report has been made available to Ofgem and is published as an Annex to our Business Plan Appendix 3: Cost Assessment and Benchmarking Approach. [77]

We note that one of the handful of high-level reasons Ofgem provides in the Draft Determination for rejecting our NoS proposal is that our proposal is partly based on a consultancy report that was available and used to support our regional factors claim for RIIO-GD2 (i.e. the UBLE report). Ofgem is wrong to dismiss the evidence set out in the UBLE report because it was available during the RIIO-2 price control. Despite the UBLE report clearly being relevant evidence, Ofgem makes no effort whatsoever to engage with the substance of the UBLE report and what it indicates, in particular, in light of the new (post-RIIO-2) information provided in our Business Plan. This is particularly startling given that the analysis in the UBLE report is what UKPN, in part, built its accepted analogous claim on for RIIO-ED2 and, also, that Ofgem itself states in the Draft Determination that "*the data behind the existing productivity and reinstatement adjustments could be made more robust with updated data*" - in our view, our Business Plan (including the UBLE report) clearly gives Ofgem updated and more reliable data.

Both the evidence base for our NoS proposal and the evidence which underpins Ofgem's current approach provide estimates of the same measure: the difference in repex workload productivity between London and non-London regions. Both sources estimate the same productivity differential of 15.5% (we describe above that Ofgem errs in how it has interpreted and applied the productivity difference per the SGN evidence to be 15%). The key difference between our NoS proposal and Ofgem's existing urbanity productivity adjustment is therefore the cost areas it applies to.

There are a number of key differences between the way we propose to apply NoS (in line with how the same adjustment was applied from UKPN at RIIO-ED2), and how Ofgem applies its existing urbanity adjustments. These differences as follows:

- **We apply the NoS adjustment to all costs for activities requiring excavation and reinstatement of streets to construct and maintain underground assets in London.** Error 1 above describes why, for activities that require underground working, there is no logical reason to account for additional costs for one of these cost types (e.g., labour, or reinstatement, or plant hire costs), and not the others. We remedy this inconsistency by applying the NoS adjustment to all costs for underground work activities (repair, connections, reinforcement, and repex). This approach is consistent with the evidence that supports our NoS proposal, and therefore Ofgem's NoS adjustment applied to UKPN at RIIO-ED2.[78] It is also broadly equivalent to the coverage of costs Ofgem's existing urbanity adjustments should be applied to when errors noted above are remedied, as shown in Annex GDQ36 – 3.
- **We capture the cost difference implied by the NoS productivity rate**. Error 2 above describes how Ofgem does not correctly calculate the incremental cost implied by its urbanity productivity rate. The SGN evidence from RIIO-GD1 that supports Ofgem's urbanity productivity adjustment has the same 15.5% productivity rate, and interpretation as the NoS

[76] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach".
[77] Specifically Annex 3c here: https://riio3.cadentgas.com/documents/annex-3c-understanding-the-baseline-level-of-efficiency-in-london.pdf
[78] Applying this adjustment to repair costs also reflects the fact that Ofgem's repair cost driver in the CSV specifically does not capture the costs we face due to larger diameter mains in London when responding to external condition reports, as it treats each repair type *equally*, no matter the diameter being worked on. We explain in our Business Plan (Appendix 3 – Cost Assessment and benchmarking Approach, Section 4.3.1.) that this is one of a number of factors which together contribute to the productivity loss for operating in London relative to elsewhere (and which is unique to gas networks), that we propose is adjusted for by applying the NoS adjustment. This is also something we emphasised to Ofgem in our response to Ofgem's supplementary question SQ67 received post Business Plan submission.

adjustment we propose. We remedy Error 2 by calculating incremental costs as an 18.3% increase on otherwise equivalent costs for non-London operations.

- **We do not apply a productivity rate to emergency labour costs**. Error 3 above describes why it does not make engineering or economic sense for Ofgem to apply an adjustment that reflects different productivity rates for underground working to emergency labour costs. We propose an alternative CSF adjustment that reflects incremental emergency costs we incur from operating in a dense, urban environment (relating to EJTs and operating a 24-hour shift pattern, see Section A.5. below).
- **We adjust for additional reinstatement costs using the NoS productivity rate, instead of Ofgem's *higher* urbanity reinstatement index.** Error 4 above describes why it does not make engineering or economic sense to use the RLA to calculate additional reinstatement costs. Ofgem implicitly applied the NoS productivity rate for UKPN's reinstatement costs in London at RIIO-ED2. We therefore align with Ofgem's decision for RIIO-GD3, despite it *reducing* the adjustment value for our London reinstatement costs (i.e., since the UBLE productivity rate is lower than the RLA for both our London and EoE networks).
- **We do not adjust maintenance or ODA activities for additional underground working costs**. Since these cost areas do not typically wholly relate to work that is completed on assets located under the street surface.

Furthermore, the evidence underpinning our NoS proposal has three key benefits over the evidence Ofgem currently relies on to support its existing approach set out in the Draft Determination:

- **It relies on more recent data**, while the SGN evidence (which Ofgem's current approach uses) relies on data from pre-RIIO-GD1 (which is over a decade old);
- **It relies on a broader data set**, which includes repex workload data from three networks, London, EoE, and SGN's Southern network and multiple contractors. It also contains additional cross checks to workload data from network service providers in other industries (i.e., Thames Water). The SGN evidence used by Ofgem currently, however, relies only on repex data from a single contractor, across two operational patches (Greenwich and Charing) in a single network (SGN).
- **It provides ancillary analysis on specific factors** that support its productivity estimate. For example, the UBLE report considers several factors to demonstrate the additional costs networks incur when working underground in London. It considers the location of assets under the street surface, type of carriageway surface, type of road structure, underground asset congestion, diameter of mains to understand the cost areas to which it makes logical sense to apply the adjustment. The evidence Ofgem currently relies on also obtains an estimate of productivity differences from repex workload data, but provides no ancillary analysis beyond anecdotal evidence to support its productivity estimate.[79]

In addition, as we discuss above, Ofgem has already accepted the exact same evidence from gas distribution networks to make an analogous adjustment to DNO costs at RIIO-ED2.

It follows that there is no logical reason for Ofgem to apply outdated evidence when a more recent and reliable evidence base exists. To do so would amount to Ofgem choosing a clearly inferior approach when there is strong evidence to support a superior alternative, and would hence constitute an error in Ofgem's cost assessment methodology.

[79] The SGN evidence does provide estimates of additional unit costs for labour and materials, however, this does not relate to, nor impact its productivity estimate.

A.4.5 Correcting errors in Ofgem's urbanity adjustment produces a similar adjustment to our proposed NoS adjustment

In its Draft Determination, Ofgem states that our NoS claim "*would represent a significant increase in the size of the cost adjustment*" compared to its urbanity factors. In fact, if Ofgem were to correct Errors 1 and 2 in its existing approach (which we explain above) it would produce a similar result than application of the NoS adjustment. Ofgem is wrong in principle and practice, therefore, that this is a relevant argument to justify rejecting our NoS claim.

Wrong in principle

In our view, Ofgem is wrong to partly justify its decision on the basis that our proposal would increase the size of the adjustment. In particular, in the Draft Determination Ofgem states that the purpose of making pre-modelling adjustments for regional costs is to normalise the uncontrollable costs unique to certain GDNs' operating areas, so that econometric modelling can be undertaken on a comparable basis.[80] In this context, it is irrational for Ofgem to put weight on the ultimate size of the adjustment as a factor for rejecting a particular proposal.

Ofgem should instead consider whether a proposal accurately captures the uncontrollable costs it is seeking to adjust for. Ofgem's reliance on an increase in the size of the adjustment as justification indicates that it may have already had an 'acceptable' value of adjustment in mind regardless of the evidence presented.

Rather, Ofgem should be led by the evidence presented to it. As set out elsewhere in response to this question, the adjustment value resulting from our NoS proposal is based on recent and reliable evidence of productivity in gas networks (that has been accepted as part of the RIIO-ED2 price control by itself). Moreover, our Business Plan provides analysis and evidence – both new and from previous price controls – showing that previous regional factor adjustments for our London operations were inadequate to cover efficient costs.

Wrong in practice

In any event, if Ofgem were to correct Errors 1 and 2 in its existing approach (explained above) this would result in a similar outcome to our NoS proposal.

We demonstrate that this is the case by comparing benchmarking outcomes under three alternative urbanity scenarios.[81] With reference to the table in Annex GDQ36 – 3, we compare Ofgem's existing, and "corrected" urbanity adjustments (Columns 1 and 2), against the NoS adjustment proposed in our Business Plan (Column 3). We create the corrected version of Ofgem's model in Column 2 by remedying Error 1 (consistent application of urbanity factors) and Error 2 (interpretation of SGN's RIIO-GD1 productivity differential) that we describe above.

We do not correct Error 3 (extending productivity to emergency costs, since we consider that this should be accounted for through our Company-Specific Factor claim – see below) and Error 4 (applying the RLA to reinstatement costs, since we consider this should be accounted for through our Nature of Streets proposal) to show that, even if Ofgem continued to rely on RIIO-GD1 evidence from SGN and reinstatement cost assumptions, our NoS proposal is still conservative.

The tables below show the change in efficiency scores and allowances for each of the London networks (Cadent's London and Eastern networks, and SGN's Southern) under each approach., As shown, the three networks collectively receive an additional £22.24 million in total allowance value in RIIO-GD3 under Ofgem's Draft Determination approach with corrected urbanity adjustments. Under

[80] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 5.64
[81] For further details see GDQ36 – Annex 3.

our NoS adjustment proposal, however, the networks would only receive £19.34 million, which is c.£3 million less than the corrected Ofgem approach.[82]

Furthermore, as we describe in Section A.4.1, the NoS adjustment when combined with the CSF we proposed in our Business Plan, is conservative to the network density model we propose as a clearly superior alternative to pre-modelling adjustments.

Table 6: RIIO-GD3 Efficiency Scores for London Networks Under Alternative Urbanity/Underground Working Approaches

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Corrected Urbanity Adjustments		Cadent Error-Corrected Draft Determination Model with our NoS Proposal	
	Efficiency Score	Efficiency Score	Delta to Corrected Model	Efficiency Score	Delta to Corrected Model
EoE	0.960	0.960	0.000	0.960	0.000
Lon	1.041	1.032	-0.009	1.032	-0.009
NW	1.006	1.008	0.002	1.008	0.002
WM	0.942	0.944	0.001	0.944	0.002
NGN	0.961	0.963	0.002	0.963	0.002
Sc	0.956	0.958	0.001	0.958	0.001
So	1.033	1.031	-0.001	1.032	0.000
WWU	1.147	1.149	0.002	1.149	0.002
85th percentile	0.957	0.958	0.001	0.958	0.001

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3.
Source: Cadent analysis.

[82] We note that the statistical performance is not materially different under these three models (the Cadent Error-Corrected Draft Determination model, the Cadent Error-Corrected Draft Determination Model with Corrected Urbanity Adjustments, and the Cadent Error-Corrected Draft Determination Model with our NoS Proposal.

Table 7: RIIO-GD3 Allowances for London Networks Under Alternative Urbanity/Underground Working Approaches (£m, 2023/24)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Corrected Urbanity Adjustments		Cadent Error-Corrected Draft Determination Model with our NoS Proposal	
	Allowance	Allowance	Delta to Corrected Model	Allowance	Delta to Corrected Model
EoE	2,129.93	2132.09	2.16	2,132.62	2.69
Lon	1,676.67	1691.28	14.62	1,690.68	14.01
NW	1,439.22	1438.53	-0.69	1,437.67	-1.56
WM	1,135.13	1134.60	-0.53	1,134.12	-1.01
NGN	1,542.63	1540.91	-1.72	1,540.73	-1.90
Sc	1,091.82	1091.42	-0.40	1,091.28	-0.54
So	2,438.78	2444.25	5.47	2,441.42	2.63
WWU	1,564.09	1562.93	-1.16	1,562.61	-1.48
Cadent Total	**6,380.96**	**6396.50**	**15.55**	**6,395.09**	**14.14**
Industry Total	**13,018.28**	**13036.02**	**17.73**	**13,031.13**	**12.85**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent analysis.

A.4.6 Conclusions on Ofgem's rejection of our Nature of Streets proposal

In its Draft Determination, Ofgem fails to justify why its existing urbanity regional factor adjustments will more accurately reflect the true level of efficient, additional costs networks incur when working with underground assets than the NoS approach we propose.

Ofgem does not engage with the evidence we put forward to support the alternative NoS approach, and instead rejects our proposal based on a small number of flawed and high-level arguments that we address in our analysis above. As a result of doing so, it discriminates unduly against Cadent, having accepted the NoS adjustment as valid (based on gas network data) for an electricity DNO.

Ofgem makes an error in rejecting our proposal on this basis since, in particular:

- it ignores recent, relevant regulatory precedent on a directly analogous claim at RIIO-ED2;
- it fails to address four errors in its existing approach to urbanity adjustments; and
- it ignores a more recent, reliable evidence base that directly estimates the additional efficient cost London networks incur when working with underground assets.

Moreover, our analysis of Ofgem's Draft Determination model demonstrates that our NoS adjustment is conservative, and would not result in a significantly different level of industry allowances compared to Ofgem's existing approach. In fact, our NoS proposal alone increases RIIO-GD3 industry allowances by only £12.85m (as shown in Table 6 above), but importantly recognises some of the additional cost incurred by our London network (increasing the London GDNs' RIIO-GD3 allowance by £14.01m). Moreover, acceptance of our NoS proposal would be a clearly superior approach given that it better reflects the exogenous cost pressures London GDNs face and would be consistent with allowance provided to electricity DNOs which also serve London.

Ofgem does state that it will continue to consider available evidence that might improve its urbanity adjustments ahead of Final Determinations, noting that "*the data behind the existing productivity and*

reinstatement adjustments could be made more robust with updated data", and that it would be open to work with GDNs "*to further explore this issue ahead of Final Determinations*".[83]

Ofgem has also requested additional information from the London and Southern GDNs to calculate repex plant hire and reinstatement adjustments for RIIO-GD3.[84] Whilst we provide the data Ofgem requests in Annex GDQ36 – 1, e note that updating the values it references for repex plant hire and reinstatement, will not be sufficient to correct the errors in both the existing adjustments made by Ofgem for urbanity and its error in rejecting our NoS proposal. We are committed to working with Ofgem between now and at Final Determinations to discuss the matters set out above and provide further information as needed so that these errors can be remediated.

Given the evidence presented above and the lack of justification for its proposals in the Draft Determination we are surprised that Ofgem has not adopted our NoS proposal as it is based on more up to date and reliable evidence as well as corrects for clear errors in the current approach that we have highlighted above. If Ofgem maintains its Draft Determination position in its Final Determination, in our view, this would represent a clear error.

A.5 Ofgem's is wrong to reject our company-specific factor proposal in its Draft Determination

This sub-section sets out four reasons why Ofgem's Draft Determination materially errs in rejecting Cadent's CSF resulting in undue discrimination against Cadent. These are: (i) that it leaves the costs of operating in London under-funded; (ii) that its materiality threshold from RIIO-GD3 is inconsistently applied with RIIO-ED2; (iii) that its materiality threshold is applied inconsistently between CSF's and re-opener applications in RIIO-GD2; and (iv) that our CSF claim meets Ofgem's remaining assessment criteria. In the remainder of this section we:

- describe Ofgem's statements as to why it rejected our company-specific factor claim;
- explain (in section A.5.2 and A.5.3 below) why Ofgem's decision to apply its materiality threshold to each individual element in our CSF claim is wrong and inconsistent with its treatment of:
    1. a directly analogous claim from UKPN at RIIO-ED2; and
    2. claims in its RIIO-GD2 Specified Streetworks reopener; and
- summarise (in section A.5.4 below) why Ofgem has, in principle, already accepted that six of the eight elements of our RIIO-GD3 claim meet its other criteria, non-materiality related, (Ofgem has not previously assessed the remaining two elements).

A.5.1 Ofgem's unjustified rejection of our company-specific factor claim, leaves the costs of operating in London under-funded for Cadent

Firstly, Ofgem claims that an impact of our proposal is to "*take out an existing element of the productivity adjustment (covering emergency job times) and package it up with previously rejected company-specific factors in order to reach the materiality threshold"*.[85]

To explain why Ofgem is wrong as regards this initial point, we note the following points:

- We describe above why Ofgem was wrong to apply its urbanity productivity index to emergency costs, which has no relationship to emergency costs, instead of the EJT adjustment we proposed in our Business Plan.
- Given that emergency activity has nothing to do with the cost pressures we face from the lower productivity of underground working in London, it was wholly logical to incorporate the EJT adjustment we proposed into a separate claim that reflects the company-specific cost

[83] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.99.
[84] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.98.
[85] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.103.

pressures we face in London for other reasons related to the dense, urban operating environment. Our proposed grouping of cost pressures was entirely reasonable, and not – as Ofgem suggests – an attempt to "package" our claims to meet a materiality threshold.

- Moreover, even if we omitted the EJT element from our company-specific factor claim for London, the combined value of the remaining elements of the claim would still meet materiality.

Secondly, Ofgem rejects our CSF claim on materiality grounds, specifically stating that:

- *"the individual components of this claim were nearly all submitted as part of its RIIO-GD2 company-specific factors claims, all of which we rejected at the time"* and *"Cadent unsuccessfully appealed our RIIO-GD2 decision, claiming our cost assessment had failed to account adequately for the substantially higher costs involved in serving the very densely populated London area. The CMA concluded that "GEMA's choice and use of materiality threshold was within its margin of appreciation as an expert regulator" and "GEMA's application of the materiality criterion to Cadent's claims was not wrong."* [86]
- "*The individual components are below the materiality threshold or are captured by existing regional adjustments*".[87]
- "*The exception is the claim for longer emergency times, but that is already captured by our existing urban productivity adjustment. We therefore propose to maintain our RIIO-GD2 position and reject this claim on the basis that the individual components are below the materiality threshold or are captured by existing regional adjustments*".[88]

For RIIO-GD3, despite several elements of our CSF being similar in nature to our RIIO-GD2 claim, we submitted evidence that used new methodologies and data to support all elements of our claim, addressing many of the comments previously raised by Ofgem at RIIO-GD2. In its Draft Determination, Ofgem did not engage with any of the new evidence we submitted for RIIO-GD3. It also did not comment on whether each element met, or failed to meet, its four assessment criteria that do not relate to materiality. Furthermore as set out in the section below whilst we accept that the CMA found that Ofgem had not erred in its approach at RIIO-GD2, it does not follow that Ofgem can ignore the substance of our submissions, particularly when new precedent has been set at RIIO-ED2 and as it is clear that the CMA itself takes the view that its own past decisions on regulatory appeals are not binding on future CMA panels.[89]

As a result, of the decisions made, Ofgem's Draft Determination leaves our London-network under-funded for its efficiently incurred costs driven by factors outside of our control.

A.5.2 Ofgem applies its materiality threshold inconsistently between RIIO-ED2 and RIIO-GD3, resulting in discrimination to our detriment

At RIIO-ED2, UKPN submitted a CSF claim to Ofgem for the additional density-related costs it incurs in its London operations.[90] Like us, UKPN also included six individual elements in its CSF claim to capture the total value of additional costs it incurs. At RIIO-ED2, Ofgem accepted that "*these factors affect operating in London disproportionately*", and accepted the claim value for two of UKPN's networks, LPN and SPN (less a regional wage adjustment).[91] We understand that Ofgem assessed the materiality of UKPN's claim value for each of its networks as the sum of the value of each element (i.e., tunnel costs, cable pit costs, link box costs, congestion charges, and shift system costs) rather than as separate, individual claims.

We prepared our company-specific claim using an analogous approach with the RIIO-ED2 claim prepared by UKPN. Despite the inherent similarity, Ofgem takes a fundamentally different approach in its treatment of our CSF claim versus UKPN's claim. Specifically, Ofgem proposes to reject our CSF

[86] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution", para. 5.127-5.128.
[87] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.129.
[88] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.129.
[89] CMA (2021), "Energy Licence Modification Appeals", vol. 1, para 3.87
[90] UKPN (2021), "RIIO-ED2 Business Plan 2023 – 2028", pg.184-185.
[91] Ofgem (2022), "RIIO-ED2 Draft Determinations – Core Methodology Document", para. 7.59.

claim for RIIO-GD3 on the basis that it did not agree the individual elements could be considered as a single factor claim.[92]

At RIIO-ED2, Ofgem deviated from its own historical regulatory approach and applied its materiality threshold to a single CSF proposed by UKPN that contained several elements it incurs from operating a network in a dense urban environment. Each of the six elements in UKPN's single CSF claim are directly analogous to an element in the single CSF claim we proposed for RIIO-GD3. There is no reason why the approach taken as regards UKPN's CSF claim in RIIO-ED2 is not equally appropriate and sensible as regards our equivalent claim in RIIO-GD3.

By applying its materiality threshold to each individual element of our CSF, Ofgem has failed to consistently apply its own regulatory standards across different industries. It has therefore discriminated unduly against our GDNs operating in London by preventing them from recovering the efficient costs they incur, while allowing electricity DNOs to recover costs that are directly analogous (and in some cases identical – e.g., costs incurred due to prevailing transport schemes such as the congestion charge).

In its Draft Determination, by way of attempted justification, Ofgem appears to rely on the outcome of the CMA appeal on this point in RIIO-GD2, stating:

"We note that the individual components of this claim were nearly all submitted as part of its RIIO-GD2 company-specific factors claims, all of which we rejected at the time. In our RIIO-GD2 Final Determinations we stated:

"We recognise the fact that these claims relate to operating in the London area, however we do not agree that they can all be considered together as one single factor as they relate to different aspects of operations and affect different cost activities. For example, the challenges of operating in London include higher wages and lower productivity which are being recognised and adjusted for separately and we do not see merit in considering these jointly as one single factor. While we accept that some of these claims have merit in principle, we do not believe that they are material enough to warrant an adjustment."

Cadent unsuccessfully appealed our RIIO-GD2 decision, claiming our cost assessment had failed to account adequately for the substantially higher costs involved in serving the very densely populated London area. The CMA concluded that "GEMA's choice and use of materiality threshold was within its margin of appreciation as an expert regulator" and "GEMA's application of the materiality criterion to Cadent's claims was not wrong.""[93]

Whilst we accept that the CMA found that Ofgem had not erred in its approach at RIIO-GD2, it does not follow that Ofgem can simply ignore the substance of our submissions on materiality in the present price control and ignore the updated approach and regulatory precedent that Ofgem itself set at RIIO-ED2 on the basis of a past CMA decision. Indeed, it is clear from the CMA's own legal framework from the RIIO-GD2 appeals that the CMA itself takes the view that its own past decisions on regulatory appeals are not binding on future CMA panels.[94]

[92] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.129.
[93] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.127 – 5.128.
[94] CMA (2021), "Energy Licence Modification Appeals", vol. 1, para 3.87

A.5.3 Ofgem inconsistently applies its materiality threshold between RIIO-GD3 CSFs and reopener applications for RIIO-GD2, resulting in discrimination to our detriment

Networks can claim for additional Streetworks allowances for costs they incur during RIIO-GD2 under Ofgem's Specified Streetworks reopener ("the re-opener"), according to the re-opener's specific criteria. Ofgem only allows networks to recover costs under the reopener if:[95]

- the Streetworks costs relate to schemes that were not in place prior to Ofgem setting the RIIO-GD2 price control; and
- the value of the re-opener is above Ofgem's materiality threshold (0.5% of the network's base revenue).

SGN submitted an application under the re-opener to recover £14.96 million (2018/19 price base) in Streetworks costs, which Ofgem determined had met the materiality threshold in SGN's Southern network.[96] SGN's application comprised *three* individual cost elements:

- Lane rental (£11.43 million) for local highway authority charges to occupy a road when construction or maintenance of the network is taking place;
- Traffic management (£2.64 million) for costs to manually operate portable traffic signals; and
- Ultra Low Emissions Zone (ULEZ) charges (£0.88 million) levied on vehicles which enter the defined zone in London, but are not compliant with emissions standards. SGN's claim for ULEZ costs is comparable to the transport schemes element of our CSF.[97]

ULEZ charges represent payments under a particular scheme that exists only in London, and is a separate category of cost from lane rental and traffic management costs.

In its Draft Determination for RIIO-GD3, however, Ofgem rejected SGN's CSF adjustment for the same ULEZ cost (with value £0.88 million for RIIO-GD2, 2018/19 price base) due, in part, to low materiality.[98]

Ofgem is therefore inconsistent both in its approach to applying its own materiality standards and remunerating these costs which are beyond management control. Ofgem's Draft Determination on Re-opener Applications for RIIO-GD2 shows it allows networks to bundle costs for distinct, but related costs under re-opener claims, but not CSF claims.

Furthermore, Ofgem's inconsistency has resulted in it allowing SGN to recover a cost element that is individually below its materiality threshold and analogous to an element of our rejected CSF claim. This further discriminates against Cadent as our London network is not allowed to recover efficient ULEZ costs for either RIIO-GD2 or, under the Draft Determination, RIIO-GD3, but SGN's Southern network is for RIIO-GD2 for no logical reason whatsoever.

A.5.4 Our CSF claim meets Ofgem's remaining assessment criteria

As we discuss above, Ofgem's Draft Determination did not engage with or comment on any of the new evidence we submitted to support elements of our CSF claim for RIIO-GD3, or the recent regulatory precedent from RIIO-ED2. In this section, we highlight areas where new evidence we submitted at RIIO-GD3, or in some cases evidence from previous price controls, addresses the reasons given by Ofgem's Draft Determination for rejecting our claim.

[95] Ofgem (2021), "RIIO-GD2 Final Determination – GD Annex (revised)", pg. 156.
[96] Ofgem (2025), "RIIO-2 Re-opener Applications 2025 Draft Determinations – GD Sector Annex", para. 4.16.
[97] In the Transport Schemes element of our CSF claim, we only include the additional ULEZ and congestion charge costs that we incur in London beyond what a non-London network might incur for schemes operating in other areas of the country. SGN does not mention a similar adjustment in its ULEZ claim under Specified Streetworks. Our claim is therefore more conservative than SGN's.
[98] Ofgem also raised concerns that accepting SGN's ULEZ claim might disincentivise decarbonisation of its fleet. See: RIIO-GD3 Draft Determination – GD annex, para. 5.133 & SGN RIIO-GD3 BPDT (Southern GDN), Table M8.13.

Where Ofgem has not commented at all on our CSF claim elements in its RIIO-GD3 Draft Determination, we respond to evidence that Ofgem raised at previous price controls as reasons to reject our claims, and explain how our new evidence addresses these concerns.

We focus on Ofgem's four assessment criteria that do not relate to materiality:

- Unique in nature to a single or small number of GDNs;
- Outside the control of the GDN (exogenous);
- Excluded from the cost drivers used in econometric modelling; and
- Excluded from other adjustments such as regional factors.

In the table below we summarise, for each CSF claim element and assessment criterion, the outcome of Ofgem's historical assessments of similar claims, discussing each below in turn. In light of the analysis set out below, once Ofgem's error in how it has applied its materiality threshold has been remedied, we would expect all elements of our claim to be accepted at Final Determinations.

Table 8: Overview of Previous Assessment Outcomes for Each Claim Element

Claim element	1. Unique?	2. Exogenous	3. Excluded from drivers	4. Excluded from RFs
Operational Property Costs	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2
Emergency Job Times	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2
Emergency Shift Patterns	Accepted for UKPN at ED2	Accepted for UKPN at ED2	Accepted for UKPN at ED2	Accepted for UKPN at ED2
Locksmith Costs	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2	Accepted for Cadent at GD2
Third-party Driven Works	Not previously assessed	Not previously assessed	Not previously assessed	Not previously assessed
LA Tunnels	Accepted for Cadent at GD2 & UKPN at ED2	Accepted for Cadent at GD2 & UKPN at ED2	Accepted for Cadent at GD2 & UKPN at ED2	Accepted for Cadent at GD2 & UKPN at ED2
Underground Governors	Not previously assessed	Not previously assessed	Not previously assessed	Not previously assessed
Transport Schemes	Accepted for Cadent & SGN at GD2 & UKPN at ED2	Accepted for Cadent & SGN at GD2 & UKPN at ED2	Accepted for Cadent & SGN at GD2 & UKPN at ED2	Accepted for Cadent & SGN at GD2 & UKPN at ED2

Source: Cadent analysis of Ofgem decisions at previous price controls.

Operational Property Costs, Locksmith Costs, Local Authority Tunnels, & Transport Schemes

At RIIO-GD2, Ofgem determined that four analogous claims raised by Cadent at the time met these assessment criteria. The four analogous claims we refer to are: (1) London depot rental costs; (2) London congestion charge; (3) London Local Authority Tunnels; and (4) Locksmiths.[99]

In its Final Determination, Ofgem recognised that "*these claims relate to operating in the London area*", but it did not agree that it could consider the claims as one single factor since "*they relate to different aspects of operations and affect different cost activities*".[100] It concluded by stating "*while we*

[99] Note: Ofgem acknowledged that these four claims met all other assessment criteria in its Draft Determination and did not change its position at Final Determination.
Source: Ofgem (2020), "RIIO-2 Draft Determinations – RIIO-GD2: Regional and Company Specific Factors Annex" ,Table 3 & Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.107-117.
[100] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.113.

accept that some of these claims have merit in principle, we do not believe that they are material enough to warrant an adjustment."[101]

Ofgem also accepted SGN's claim for £0.88 million (2018/19 price base) in ULEZ charges under its RIIO-GD2 Specified Streetworks reopener.[102] We discuss above why Ofgem has not consistently applied its own materiality standards by provisionally allowing SGN to recover these costs in RIIO-GD2.

Finally, we describe in Section A.5.2 above that Ofgem accepted UKPN's CSF at RIIO-ED2 which included cost elements associated with working in Local Authority tunnels, and charges for London transport schemes. By not accepting our analogous claim elements at RIIO-GD3, Ofgem discriminates unduly between gas and electricity distribution companies.

Emergency Job Times

Ofgem accepted our claim for EJTs in principle (including the materiality of the claim) at RIIO-GD2.[103] However, Ofgem incorrectly accounted for the additional cost we incur by extending its existing urbanity productivity adjustment to cover emergency labour costs. We describe above why Ofgem was incorrect to apply its urbanity productivity index, which has no relationship to emergency costs, instead of the EJT adjustment we proposed. We therefore include EJTs under our CSF claim.

Emergency Shift Patterns

At RIIO-ED2, UKPN raised a claim for additional costs it incurs to maintain a central London shift system, due to a low number of employees living in London. Ofgem accepted UKPN's claim against the same assessment criteria.[104] We also raised an analogous claim, 24-hour shift patterns, at RIIO-GD2. Ofgem rejected our claim on two grounds beyond materiality:[105]

1. That it was not clear from our analysis "*how regional wage differences were accounted for and excluded from the estimated impact*", including regional wage differences in overtime pay; and
2. That the analysis was based on "*Cadent salary costs and number of FTEs which are, to some extent, under the control of the company*".

We discuss in our Business Plan how we quantify the incremental cost we incur due to Emergency Shift Patterns as the cost saving we would realise if we were not required to operate a 24-hour shift system.[106] That is, if we instead operated a call-out and standby system, similar to non-London gas networks. The additional cost we estimate therefore relates to the additional labour hours and payments necessary to operate a 24-hour shift system. The RLA accounts for differences in hourly wage rates across regions, but not additional labour time and payments to operate a 24-hour shift system. Furthermore, as both are based on London pay rates and payments, the difference is clean from any cross-regional wage difference. As the adjustment is then applied as a percentage to normalised labour costs in Ofgem's modelling, we are therefore not double counting regional wage differences in our calculation.

At RIIO-ED2, Ofgem accepted an analogous claim by UKPN for additional costs of operating a central London shift system.[107] It accepted that London DNOs are disproportionately affected by a low number of employees living in London, and a high proportion of overnight working. Ofgem also accepted that UKPN's adjustment value was distinct from its regional wage adjustment.

If it did not accept our analogous claim element at RIIO-GD3, Ofgem would materially err and

[101] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.113.
[102] Ofgem (2025), "RIIO-2 Re-opener Applications 2025 Draft Determinations – GD Sector Annex", para. 4.16.
[103] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised)", para. 3.87.
[104] Ofgem (2022), "RIIO-ED2 Final Determinations – Core Methodology Document", para. 7.36.
[105] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised), para. 3.105.
[106] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised), para. 3.105.
[107] Ofgem (2022), "RIIO-ED2 Draft Determinations – Core Methodology Document", para. 7.58.

discriminate unduly between gas and electricity distribution companies.

Third-party Driven Works

The Third-Party Driven Works claim element is new for RIIO-GD3. Ofgem has not commented on whether this element of our claim would meet its other criteria besides materiality in its Draft Determination for GD3. However, we have provided evidence that it does meet these criteria in our Business Plan.[108]

Underground Governors

The Underground Governors claim element is new for RIIO-GD3. Ofgem has not commented on whether this element of our claim would meet its other criteria besides materiality in its Draft Determination for GD3. However, we have provided evidence that it does meet the required criteria in our Business Plan.[109] We also note it is analogous to elements of UKPN's accepted claim at RIIO-GD2 in relation to underground cable pits and link boxes.

A.5.5 Conclusion on Ofgem's rejection of our company-specific factor claim

As explained above, Ofgem is wrong to reject our company-specific factor claim for five reasons:

1. The stated reasons for rejection of our claim are wrong for a variety of reasons (as explained above);
2. It leaves the costs of operating in London under-funded (by £23.63m as shown in the Table below);
3. Ofgem's application of its materiality threshold is inconsistent with the approach taken in RIIO-ED2;
4. Ofgem's application of its materiality threshold is applied inconsistently between RIIO-GD3 CSF's and RIIO-GD2 re-opener applications; and
5. Our CSF claim meets Ofgem's remaining assessment criteria.

To remedy this error for Final Determination Ofgem should accept our claim in full and apply it within its cost modelling suite.

In the tables below we show the impact of accepting our company-specific factor, compared to our Error-Corrected Draft Determination model (efficiency scores and allowances).[110]

[108] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section. 4.3.2.
[109] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section. 4.3.2.
[110] Allowances for the London GDN increase by £23.63 million to cover the incremental cost we quantify in our CSF claim. Applying the CSF claim to the London GDN also increases the coefficient estimate on the totex CSV driver, which disproportionately benefits networks that typically have higher driver values. Allowances for the Southern, and EoE GDNs therefore also increase by £5.02 million and £4.02 million respectively, despite these networks receiving no additional regional factor adjustments under our proposal, beyond Ofgem's GD3 DD proposal.

Table 9: Impact of Accepting Our Company-Specific Factor vs. the Cadent Error-Corrected DD Model (Efficiency Scores)

	Corrected Draft Determination Model	Corrected Draft Determination Model with Cadent Network Specific Factors claim Accepted	
	Efficiency Score	Efficiency Score	Delta to Corrected Model
EoE	0.960	0.961	0.001
Lon	1.041	1.028	-0.013
NW	1.006	1.008	0.002
WM	0.942	0.945	0.003
NGN	0.961	0.962	0.001
Sc	0.956	0.960	0.003
So	1.033	1.033	0.000
WWU	1.147	1.149	0.002
85th percentile	0.957	0.960	0.003

Source: Cadent analysis.

Table 10: Impact of Accepting Our Company-Specific Factor vs. the Cadent Error-Corrected DD Model (£m, 2023/24)

	Corrected Draft Determination Model	Corrected Draft Determination Model with Cadent Network Specific Factors claim Accepted	
	Allowance	Allowance	Delta to Corrected Model
EoE	2,129.93	2133.95	4.02
Lon	1,676.67	1700.29	23.63
NW	1,439.22	1440.01	0.79
WM	1,135.13	1134.75	-0.38
NGN	1,542.63	1544.25	1.62
Sc	1,091.82	1090.99	-0.83
So	2,438.78	2443.80	5.02
WWU	1,564.09	1565.12	1.03
Cadent Total	**6,380.96**	**6409.01**	**28.06**
Industry Total	**13,018.28**	**13053.17**	**34.89**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent analysis.

A.6 Our response to Ofgem's Draft Determination decision to retain the RIIO-GD2 sparsity adjustment

In the Draft Determinations, Ofgem proposes to maintain its previous approach (used at RIIO-GD1 and RIIO-GD2) to apply sparsity adjustments. Specifically, Ofgem applies a sparsity adjustment to Emergency and Repair costs, stating that *"these particular activities incur lost productivity due to longer travel times"*.[111] To apply these sparsity adjustments, Ofgem calculates a sparsity index for each GDN as described in Section A.2 [112] Based on evidence presented within our plan, and the lack of well-evidenced proposals from other GDNs, we have not identified clear improvements to Ofgem's sparsity adjustment to date.

The evidence we presented in our business plan shows that the only areas where sparsity influences costs (and hence, where Ofgem should make sparsity adjustments) are Emergency and Repair activities, in line with Ofgem's Draft Determination proposals. Our evidence also suggests that Ofgem's proposed sparsity adjustments are broadly aligned with the level of incremental sparsity-related costs that we face in aggregate.

We note that, however, in their business plans, WWU and SGN proposed changes to both the calculation of sparsity adjustments, and the cost areas which the adjustments are applied to. Ofgem rejected WWU's and SGN's proposals at Draft Determinations, but stated that it *"would be open to work with the GDNs through the CAWG to further explore this issue [of sparsity adjustments] ahead of Final Determinations".*[113] Ofgem has also stated that "*a different threshold [for considering an area to be sparse] to the existing average measure of sparsity may be appropriate*" and that "*SGN's proposed use of the Adjusted Geographic Concentration Index might be instructive in this regard [to the sparsity threshold]".*[114]

We have carefully assessed the proposals of WWU and SGN to the extent possible given information that has been published and shared with GDNs. Having reviewed these proposals, we set out below why we believe neither is either sufficiently justified or demonstrably improves on Ofgem's current approach to sparsity adjustments. Therefore, based on the evidence presented within our business plan, and the absence of a well-evidenced proposal from any other GDNs, we agree with Ofgem's Draft Determination approach to calculating and applying sparsity adjustments.

A.6.1 We do not think Wales and the West Utilities' proposals represent a justified departure from Ofgem's existing approach on statistical and operational grounds

As part of its business plan submission, WWU proposed (i) a new calculation of sparsity indices, based on a higher Upper Quartile (UQ) population density threshold for considering an area to be "sparse", and (ii) extending the application of a sparsity adjustment to Repex and Maintenance costs (alongside Emergency and Repair costs, which received sparsity adjustments at RIIO-GD2). WWU's sparsity proposals are based on a report prepared by Oxera.[115]

Oxera notes that it does not agree with Ofgem's approach of using the GB average population density as the threshold for considering an LA to be sparse. Oxera states that "*the GB average threshold chosen [by Ofgem] at GD2 was not based on operational insight*" and that "*costs associated with sparsity only begin to manifest at higher levels of sparsity*".[116] Despite criticising Ofgem for a lack of operational insight, Oxera does not provide any evidence for these claims. In support for its claims, Oxera simply references NGN's RIIO-3 SSMC response, which states that "*it is not clear that [the GB average] threshold is appropriate – costs associated with population sparsity may begin to manifest at*

[111] Ofgem (2025), "RIIO-2 Re-opener Applications 2025 Draft Determinations – GD Sector Annex", para. 5.112.
[112] Cadent review of Ofgem's RIIO-GD3 model.
[113] Ofgem (2025), "RIIO-2 Re-opener Applications 2025 Draft Determinations – GD Sector Annex", para. 5.113.
[114] Ofgem (2025), "RIIO-2 Re-opener Applications 2025 Draft Determinations – GD Sector Annex", para. 5.116.
[115] Oxera (2024), "Regional factors for RIIO-GD3: sparsity – Prepared for Wales & West Utilities".
[116] Oxera (2024), "Regional factors for RIIO-GD3: sparsity – Prepared for Wales & West Utilities", pg 9.

a higher or lower level of sparsity, and the appropriate threshold should be investigated."[117] Based on our reading of NGN's RIIO-3 SSMC response, we note that NGN does not explicitly state its support for a higher sparsity threshold. In fact, NGN only stresses the importance of selecting an appropriate threshold, and notes that the appropriate threshold might be "*higher or lower*" than the current threshold. Oxera does not provide any evidence or justification for proposing to set the threshold at the upper quartile specifically (as opposed to any other threshold higher or lower than the average).

WWU also argues that Ofgem should extend the application of sparsity adjustments to repex and maintenance costs. In its Business Plan, WWU claims that "*there is no operational difference*" between Emergency/Repair work and repex work.[118] WWU is wrong to claim that there is no operational difference between emergency/repair and repex work, as the drivers of Emergency/Repair work are clearly different from the drivers of repex work.

GDNs are required to undertake Emergency and Repair work at short notice, in response to exogenous network faults. As GDNs have no control over where and when faults might occur, Emergency and Repair work is reactive in nature, with limited or no opportunity for GDNs to plan ahead and little ability to optimise work to be delivered more efficiently.

In contrast, repex work is a planned activity and GDNs are able to optimise work to be delivered in RIIO-3 from the remaining volumes of mains replacement in their Tier 1 programmes to deliver as efficiently as possible. For example, delivering works in close proximity at the same time to avoid the need to travel long distances between jobs within a small period, minimising any additional travel costs. This is also true of other cost-benefit justified mains replacement. As a result, the existence of an exogenous sparsity effect on Emergency and Repair costs does not translate to the existence of a similar effect on repex costs. On Maintenance work, we note that neither WWU's business plan nor Oxera's report on sparsity provide any evidence of sparsity-related effects to Maintenance costs.

A.6.2 SGN's AGC index is not an accurate measure of GDNs' level of sparsity, and hence should not inform Ofgem's sparsity-related adjustments

In its Business Plan, SGN argued that Ofgem should incorporate the Adjusted Geographic Concentration (AGC) index into its calculation of sparsity adjustments.[119] Specifically, SGN argued that *"Ofgem may want to test whether this metric [the AGC index] could explain regional differences in costs further".* Alongside its business plan, SGN submitted a report on regional factors by Frontier Economics.[120] Based on our review of the report, we understand that Frontier calculated the AGC index as a function of the absolute difference between (i) the proportion of the population in a GDNs' service area living in a Local Authority area, and (ii) the proportion of the land area of that Local Authority area compared to the GDN's total land area. As a result, the AGC index is a measure of population *concentration,* showing the amount of *variation in population density* within a GDN region. In effect, the AGC index *does not measure density/sparsity at the GDN level*, but rather measures the degree to which a GDN's population is uniformly distributed over its land area.

The Frontier Economics report shows that the AGC index is not correlated with population density/sparsity at the GDN level.[121] As a result, Ofgem would be wrong to rely on the AGC index to calculate incremental sparsity-related costs (and inform the resulting sparsity-related adjustments). Furthermore, we note that SGN and Frontier Economics provide no evidence of any correlation between a higher AGC index and higher costs, and no suggestions or proposals of how Ofgem might use the AGC index in its calculation of sparsity-related adjustments. In fact, Frontier Economics states

117 NGN (2024), "RIIO-3 Sector Specific Methodology Consultation, Overview & GD annex – NGN Response", pg 64.
118 WWU (2024), "RIIO-GD3 Business Plan, Cost Assessment and Benchmarking Approach", Section 6.2.4., pg 63.
119 SGN (2024), "RIIO-GD3 Business Plan – Cost Assessment and Benchmarking Annex", paras. 300-302.
120 Frontier Economics (2024), "Accounting for Regional Factors in Ofgem's Totex Model for GD3".
121 Frontier Economics (2024), "Accounting for Regional Factors in Ofgem's Totex Model for GD3", pg 50, Figure 20.

in its report that "*we have not taken consideration of this metric [the AGC index] for the purposes of Ofgem's efficiency analysis further*".[122]

Lastly, we note that, if Ofgem were to incorporate the AGC index in its calculation of sparsity adjustments between Draft Determinations and Final Determinations, Ofgem would not have the opportunity to consult on the alternative calculation of sparsity adjustments and gather feedback from all industry stakeholders before making a decision. Therefore, Ofgem would be wrong to incorporate the AGC index in its calculation of sparsity adjustments at Final Determinations.

A.7 Concluding remarks regarding Ofgem's regional and company-factors Draft Determination decision

As described above, our coherent proposal for Ofgem to address regional differences between the GDNs in its RIIO-GD3 cost assessment methodology is:

- To use a density model to capture exogenous regional cost drivers within the totex model, in addition to applying a regional labour adjustment for the London, Eastern, and Southern GDNs (which recognises both of our proposed improvements);
- If Ofgem does not adopt this, it should apply the following regional and company specific factor proposals:
    - A regional labour adjustment for the London, Eastern, and Southern GDNs (which recognises both of our proposed improvements);
    - The Nature of Streets adjustment for the London, Eastern and Southern GDNs, in place of its current urbanity adjustments;
    - The London GDNs Network-Specific Factors claim; and
    - The sparsity adjustment as used at RIIO-GD2 (applied to emergency and repairs costs only).

The Tables below shows the impact of this latter approach on GDNs' efficiency scores and allowances. Clearly, failing to apply these regional factor proposals (in the absence of using a density model to set allowances) results in Ofgem systematically underfunding our GDNs which serve the area in and around London, and hence unduly discriminates against these GDNs.

[122] Frontier Economics (2024)," Accounting for Regional Factors in Ofgem's Totex Model for GD3", pg 50.

Table 11: Impact of Accepting Our Regional and Company-Specific Factor Proposals vs. the Cadent Error-Corrected DD Model (Efficiency Scores)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Cadent Regional and Company Specific Factors Accepted	
	Efficiency Score	Efficiency Score	Delta to Corrected Model
EoE	0.960	0.958	-0.002
Lon	1.041	1.008	-0.033
NW	1.006	1.013	0.007
WM	0.942	0.949	0.007
NGN	0.961	0.967	0.006
Sc	0.956	0.963	0.006
So	1.033	1.033	0.000
WWU	1.147	1.154	0.008
85th percentile	0.957	0.958	0.002

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3.
Source: Cadent analysis

Table 12: Impact of Accepting Our Regional and Company-Specific Factor Proposals vs. the Cadent Error-Corrected DD Model (£m, 2023/24)

	Cadent Error-Corrected Draft Determination Model	Cadent Error-Corrected Draft Determination Model with Cadent Regional and Company Specific Factors Accepted	
	Allowance	Allowance	Delta to Corrected Model
EoE	2,129.93	2139.55	9.61
Lon	1,676.67	1731.58	54.91
NW	1,439.22	1433.13	-6.09
WM	1,135.13	1130.12	-5.01
NGN	1,542.63	1536.25	-6.38
Sc	1,091.82	1087.42	-4.40
So	2,438.78	2443.50	4.72
WWU	1,564.09	1557.96	-6.13
Cadent Total	**6,380.96**	**6434.39**	**53.43**
Industry Total	**13,018.28**	**13059.52**	**41.24**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift. Source: Cadent analysis.

Section B Our response to Ofgem's Draft Determination cost exclusions

In its RIIO-3 Sector Specific Methodology Decision (SSMD), Ofgem stated that "*our current position for RIIO-GD3, is to retain as many cost areas/activities as possible within our primary cost modelling. This is to support a comprehensive and robust assessment of overall totex efficiency. We recognise however, that it will be necessary to make some exclusions and we think that the criteria applied at RIIO-GD2 provide a suitable starting point for RIIO-GD3. We are minded to retain the materiality threshold for large projects at £5m, but we intend to consider both large and atypical repex projects for exclusion as well as capex projects*."[123]

At Draft Determination, Ofgem applied exclusions:

- "*when costs are inappropriate for comparative benchmarking because they are only incurred by one or two GDNs*";
- "*where costs are not explained by the cost drivers used in their cost models*", or
- "*where there is a substantial change in the nature of costs between RIIO-GD2 and RIIO-GD3*".[124]

We agree with Ofgem's approach for RIIO-GD3 to retain as many cost areas/activities as possible within its primary cost modelling to support a comprehensive and robust assessment of overall totex efficiency and to make exclusions only where necessary. However, whilst we are largely supportive of costs related to specific activities and costs associated with particular projects being excluded from Ofgem's Draft Determination comparative benchmarking, we disagree with some of Ofgem's specific decisions. Specifically, we disagree where Ofgem's decisions do not align with Ofgem's exclusion criteria or result in significant error sin applying its stated methodology, thereby undermining the aim of achieving "*a comprehensive and robust assessment of overall totex efficiency*". We have explained our concerns below against the relevant cost items, explaining why Ofgem's decisions were wrong, as well as setting out how to remedy them.

We note that for the remainder of this section, where we refer to a cost as "excluded", we refer to the cost being excluded from the comparative benchmarking regression analysis.

B.1 We are supportive of the majority of cost exclusions made by Ofgem at Draft Determinations, with some important points to note

We agree with Ofgem's approach to exclude costs related to specific activities that its assessment finds to meet its criteria, requiring technical and non-regression assessment. Notably, we agree with Ofgem's specific decisions to not include the following areas within the comparative benchmarking:

- Multiple Occupancy Buildings (MOBs)
- Streetworks
- Repex Diversions
- Smart Metering
- Land Remediation
- SIU Opex
- PSUP Capex
- Cyber Opex and Capex
- Iron Stubs
- Growth Governors

Each of these still fulfil one or several of Ofgem's exclusion criteria and we have set out the rationale for why we believe they should be excluded within Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.[125] However, it is important to note that for:

[123] Ofgem (2024) "RIIO-3 Sector Specific Methodology Decision – GD Annex", para 5.67
[124] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.62
[125] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.2

- PSUP Capex – as part of our response to Draft Determination, we are resubmitting evidence on PSUP capex which results in the level of costs changing. These revised costs are set out in the Table below.

Table 13: Revised PSUP Capex Costs (£m, 23/24 prices)

[table redacted]

Further information on this can be found in our response to CADQ14.[126]

- [redacted]

- Iron Stubs – whilst we agree that these costs should excluded from comparative regression analysis, we disagree with the decision to not fund any forecasts as part of draft Determination.[127] We will work with Ofgem to design an appropriate PCD to secure funding for this essential mandated workload in the forthcoming price control. Information to support the design of the PCD can be found in GDQ8
- Growth Governors – we only agree with the treatment proposed in the Draft Determination given Ofgem's policy decision to move workload and costs associated with the majority of reinforcement activities into Uncertainty Mechanisms for RIIO-GD3. As Ofgem notes, in light of this, to include costs for other periods in regressed costs would be inconsistent with this decision. However, were this policy position to change at Final Determinations we would suggest that Growth Governors are included within regressed costs as whilst Growth Governors support the reinforcement of the network, the reinforcement of a network can also be achieved through longer and/or bigger pipe lay which, pre-Ofgem's policy decision, is included within regressed costs.

We also understand that whilst Electric Vehicles are stated by Ofgem as being excluded from regressed costs in the Draft Determination no actual exclusions have been made within modelling files. Furthermore, whilst in the Draft Determination it states that a new Operational Transport

[126] We have provided an updated view of these costs also in DDQ67 which we have submitted to Ofgem alongside this response for incorporation into its Final Determination.
[127] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", paras 5.296 – 5.300

Emissions Reduction PCD will be established for RIIO-3, from engagement with Ofgem's cost team we understand the starting point for assessment of spend on zero emission vehicles (including electric vehicles) will be that they are *not* excluded from regressed costs. This is in line with arguments set out in Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.[128] As discussed in our appendix there is no justification to remove costs associated with this activity as they do not meet Ofgem's stated criteria for exclusion.

We also agree with the exclusions made for specific programmes of work or projects and bespoke outputs for technical assessment set out in the Draft Determination and accompanying model files for:

- Advanced leakage detection (ALD) costs
- Digital Platform for Leakage Analytics(DPLA) – Cadent only
- Tinsley Viaduct Diversion
- West Winch Pipeline
- London Medium Pressure
- Grays Medium Pressure
- Other bespoke or technically assessed costs from RIIO-GD1 and RIIO-GD2 to ensure a consistent view for comparative benchmarking

Each of these fulfil one or several of Ofgem's exclusion criteria and we have set out the rationale for why we believe they should be excluded within Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.[129]

It is important to note, however, that whilst we agree with the exclusion of costs related to ALD, as set out in our response to GDQ2, we are submitting updated cost estimates for ALD for Final Determination. Cost estimates have been updated based upon a requirement for an increased volume of fixed and handheld sensors. The overall increase is £3.65m compared to our original business plan submission and the table below provides details on our costs after the revision (DPLA and ALD combined) to facilitate updating Ofgem's separate assessment of our proposal and to ensure all costs are excluded from regression benchmarking. Our DPLA costs remain unchanged. Please refer to our response to GDQ2 and Cadent-DDQ67, which we have submitted to Ofgem, for further details.

[128] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.3
[129] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1

Table 14: Revised Costs (£m, 23/24 prices) - Digital Platform for Leakage Analytics (DPLA) & Advanced Leakage Detection (ALD)

Network	Cost area	2027	2028	2029	2030	2031	Total
		£m	£m	£m	£m	£m	£m
EoE	DPLA & ALD - Business Support	1.17	0.08	0.08	0.08	0.08	1.48
EoE	DPLA & ALD - Work Management	1.50	1.50	1.50	1.50	1.50	7.48
EoE	DPLA & ALD - Other Capex	12.80	-	-	-	-	12.80
Lon	DPLA & ALD - Business Support	0.35	0.08	0.08	0.08	0.08	0.67
Lon	DPLA & ALD - Work Management	0.56	0.56	0.56	0.56	0.56	2.82
Lon	DPLA & ALD - Other Capex	5.29	-	-	-	-	5.29
NW	DPLA & ALD - Business Support	1.17	0.08	0.08	0.08	0.08	1.49
NW	DPLA & ALD - Work Management	0.92	0.92	0.92	0.92	0.92	4.60
NW	DPLA & ALD - Other Capex	8.46	-	-	-	-	8.46
WM	DPLA & ALD - Business Support	1.17	0.08	0.08	0.08	0.08	1.49
WM	DPLA & ALD - Work Management	0.72	0.72	0.72	0.72	0.72	3.60
WM	DPLA & ALD - Other Capex	6.34	-	-	-	-	6.34
Cadent	DPLA & ALD - Business Support	3.86	0.32	0.32	0.32	0.32	5.14
Cadent	DPLA & ALD - Work Management	3.70	3.70	3.70	3.70	3.70	18.52
Cadent	DPLA & ALD - Other Capex	32.89	-	-	-	-	32.89

We also recognise in respect of the West Winch Pipeline project that whilst recognised in modelling files as an exclusion, at Draft Determination this proposed project and associated costs have been rejected by Ofgem. In our responses to CADQ8 and CADQ14 we provide the required detail on the deliverables and anticipated costs of the feasibility and design study requested by Ofgem. Should this project be fully or partly accepted at Final Determinations we expect it to still be excluded from comparative benchmarking for the reasons outlined in Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach[130].

B.2 We disagree, however, with the treatment of certain categories of expenditure and specific projects assessed for our networks

B.2.1 Ofgem has made an oversight in not excluding and assessing PSUP opex outside of the totex regression

In the Draft Determination, Ofgem has only excluded from comparative benchmarking GDNs PSUP capex costs. In making this exclusion Ofgem states that "*the discrete nature of these investments limits our ability to model costs and benchmark through direct comparison*."[131] This justification for exclusion, however, also equally applies to PSUP opex, which was also excluded for separate

[130] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1
[131] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", paras. 5.301 & 5.302

assessment at RIIO-GD2. This is shown in Ofgem's RIIO-GD2 Final Determinations and in the exclusion of this cost line from Maintenance costs in their RIIO-GD2 normalisation files, within their totex modelling suite. [132] We also note this in Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach – as well as setting out that DNOs had both PSUP opex and capex excluded from comparative benchmarking at RIIO-ED2.[133]

Having discussed this with Ofgem cost assessment team we understand this was an oversight and these costs were included within regressed costs in error, with PSUP exclusions intending to roll over the treatment applied at RIIO-GD2. As a result, we would expect ours and other GDN's PSUP opex to be removed from comparative benchmarking at Final Determinations to remedy this clear error. To support Ofgem in making this exclusion in the Table below we set out the value and location of PSUP opex costs within our BPDTs and highlight their RIIO-GD3 value specifically[134].

Table 15: PSUP Opex to be excluded from comparative benchmarking (£m, 23/34 prices)

[redacted]

B.2.2 We disagree that Net Zero and Vulnerability related costs should not be excluded from comparative benchmarking

In Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach, we proposed that costs related to two key areas should be excluded from regressed costs[135]:

- Net Zero activities covering (i) Net Zero UIOLI allowances proposed for the Net Zero and Re-opener Development (NZARD) and (ii) additional resource costs to support coordination, engagement and planning activities associated with the Net Zero transition; and
- Vulnerability activities which were previously funded outside of totex, or as bespoke outputs (personalised welfare), which have now been specified within baseline totex in line with Ofgem's RIIO-3 guidance.

Our rationale for exclusion was based upon misalignment with regression cost drivers, inconsistent implementation across GDNs, poor correlation with MEAV, risk of perverse incentives and specific cost drivers differing by region and policy.

At Draft Determination, Ofgem did not make any direct comment on our proposals but proposed to:

[132] Ofgem (2021) "RIIO-GD2 Final Determination – Cadent Annex (revised), para 3.48
[133] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.2
[134] Full annual costs required for exclusion from benchmarking for all years (RIIO-GD1, GD2 and GD3) can be found in Table M8.14 of each of our networks' BPDTs
[135] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1

- retain the RIIO-GD2 Net Zero and Re-opener Development (NZARD) UIOLI allowance for RIIO-GD3 and allow our proposal for RIIO-GD3 in full;[136]
- reject the additional baseline funding we had sought for resources to support the Net Zero transition; [137]
- fund vulnerability costs through two channels:
    - 'BAU Vulnerability and Carbon Monoxide Safety Activities' to be funded as wider ex-ante totex allowances (benchmarked as part of comparative regression analysis); and[138]
    - Vulnerability and Carbon Monoxide Allowances are to be specified, which sit outside of totex (and are not benchmarked in the regression).[139]

However, for cost assessment purposes, none of the proposed costs were excluded from regressed costs.

In respect of costs associated with NZARD, this is clearly an error as Ofgem has granted our proposed allowance in full, but then included the amount in comparative benchmarking and applied the catch-up efficiency challenge. We have raised this clear error with Ofgem and expect this to be correct at Final Determinations. Otherwise, Ofgem's decisions made on this topic would be inconsistent as we would actually receive a lower allowance (given application of the catch-up efficiency challenge) and it would go against the established method for setting NZARD allowances from RIIO-GD2 (i.e. not based on regression benchmarking).

Regarding the additional funding we have sought for resources to support the Net Zero transition, should Ofgem fully or partially accept the needs case for these resources at Final Determinations we propose they are excluded from regressed costs for the reasons outlined in our Business Plan Appendix 3.[140]

The costs we originally submitted across both of these areas in our Business Plan are set out in Table 14 below:

[136] Ofgem (2025), "RIIO-3 Draft Determinations Overview Document", Table 9.
[137] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 3.171
[138] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 3.118
[139] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 3.125
[140] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1.3

Table 16: Net Zero UIOLI and Support Activities for NZ Transition to be excluded (Business Plan Submitted Costs, £m, 23/24 prices)[141]

Business Plan Submitted Costs		BPDT M8.14 Bespoke, Uncertain and Separate Activities						
		RIIO-GD2	RIIO-GD3					
		Total	2027	2028	2029	2030	2031	Total
EoE	Net Zero UIOLI	8.27	1.82	1.82	1.82	1.82	1.82	9.10
EoE	Net Zero transition activities	0.00	1.66	1.66	1.57	1.57	1.57	8.03
EoE	Subtotal - NZ within baseline	8.27	3.48	3.48	3.39	3.39	3.39	17.13
Lon	Net Zero UIOLI	4.52	1.00	1.02	1.02	1.02	1.02	5.08
Lon	Net Zero transition activities	0.00	1.10	1.08	1.03	1.03	1.03	5.27
Lon	Subtotal - NZ within baseline	4.52	2.10	2.10	2.05	2.05	2.05	10.35
NW	Net Zero UIOLI	5.46	1.23	1.21	1.21	1.21	1.21	6.07
NW	Net Zero transition activities	0.00	1.37	1.39	1.33	1.33	1.33	6.75
NW	Subtotal - NZ within baseline	5.46	2.60	2.60	2.54	2.54	2.54	12.82
WM	Net Zero UIOLI	4.07	0.88	0.89	0.89	0.89	0.89	4.44
WM	Net Zero transition activities	0.00	0.97	0.96	0.91	0.91	0.91	4.66
WM	Subtotal - NZ within baseline	4.07	1.85	1.85	1.80	1.80	1.80	9.10
Cadent	Net Zero UIOLI	22.32	4.93	4.94	4.94	4.94	4.94	24.69
Cadent	Net Zero transition activities	0.00	5.10	5.09	4.84	4.84	4.84	24.71
Cadent	Subtotal - NZ within baseline	22.32	10.03	10.03	9.78	9.78	9.78	49.40

However, as set out in our responses to CADQ6 and OVQ15, for our Draft Determination response, we have revisited our net zero transitional costs to consider baseline and UIOLI funding, and removed £6.6m of costs across our networks, from our baseline where we believe these have a greater degree of uncertainty and can therefore be funded through the NZARD UIOLI mechanism. Given this movement, we would expect the size of the NZARD UIOLI to be adjusted upwards by this amount from £24.7m to £31.3m with changes to amounts excluded as part of NZARD or baseline net zero costs being updated to reflect these figures in Ofgem's models.[142] Detailed figures of revised costs required are set out in the Table below.[143]

[141] Full annual costs required for exclusion from benchmarking for RIIO-2 years can be found in Table M8.14 of each of our networks' BPDTs
[142] Should Ofgem determine that the residual baseline costs are recoverable but not for baseline funding, then we would call on Cadent's NZARD UIOLI allowance to be further increased.
[143] We have provided an updated view of these costs and their allocation into the NZARD UIOLI also in Cadent-DDQ67 which we have submitted to Ofgem alongside this response for incorporation into its Final Determination.

Table 17: Net Zero UIOLI and Support Activities for NZ Transition to be excluded (Revised costs, £m, 23/34 prices)

Revised Costs		BPDT M8.14 Bespoke, Uncertain and Separate Activities						
		RIIO-GD2	RIIO-GD3					
		Total	2027	2028	2029	2030	2031	Total
EoE	Net Zero UIOLI	8.27	2.25	2.25	2.25	2.25	2.25	11.24
EoE	Net Zero transition activities	0.00	1.23	1.23	1.14	1.14	1.14	5.89
EoE	Subtotal - NZ within baseline	8.27	3.48	3.48	3.39	3.39	3.39	17.13
Lon	Net Zero UIOLI	4.52	1.28	1.30	1.30	1.30	1.30	6.49
Lon	Net Zero transition activities	0.00	0.82	0.80	0.75	0.75	0.75	3.86
Lon	Subtotal - NZ within baseline	4.52	2.10	2.10	2.05	2.05	2.05	10.35
NW	Net Zero UIOLI	5.46	1.58	1.57	1.57	1.57	1.57	7.87
NW	Net Zero transition activities	0.00	1.02	1.03	0.97	0.97	0.97	4.95
NW	Subtotal - NZ within baseline	5.46	2.60	2.60	2.54	2.54	2.54	12.82
WM	Net Zero UIOLI	4.07	1.13	1.14	1.14	1.14	1.14	5.68
WM	Net Zero transition activities	0.00	0.72	0.71	0.66	0.66	0.66	3.42
WM	Subtotal - NZ within baseline	4.07	1.85	1.85	1.80	1.80	1.80	9.10
Cadent	Net Zero UIOLI	22.32	6.25	6.26	6.26	6.26	6.26	31.28
Cadent	Net Zero transition activities	0.00	3.78	3.77	3.52	3.52	3.52	18.12
Cadent	Subtotal - NZ within baseline	22.32	10.03	10.03	9.78	9.78	9.78	49.40

In respect of vulnerability activities, Ofgem has materially erred in not excluding these costs as they clearly fulfil one of their exclusion criteria – that "*there is a substantial change in the nature of costs between RIIO-GD2 and RIIO-GD3*"[144]. Specifically, at RIIO-GD2, these costs were funded outside of totex and so were not within baseline totex for either for the RIIO-GD1 or RIIO-GD2 periods. In Ofgem's RIIO-GD3 Draft Determination, Ofgem proposed vulnerability costs should be included within baseline totex allowances. However, not excluding these costs and funding them outside of comparative totex means there is an inconsistent level of vulnerability costs in regressed costs (only being present in costs for RIIO-GD3). Therefore, vulnerability costs should be excluded from regressed totex for consistency.

Furthermore, if costs associated with vulnerability are not excluded from comparative regression benchmarking, the driver which Ofgem's model would allocate to "explain" these is MEAV. This implicitly assumes that vulnerability costs are driven by network scale. However, the drivers of need are actually, the potential need for support (i.e. volume of vulnerable customers) – which does not necessarily correlate to network scale (for example, small networks serving urbanised areas may see proportionately larger numbers of vulnerable customers, than larger rural networks) and requirements of particular stakeholders and organisations in particular areas who work with us to deliver enhanced support, as explained in our Business Plan Appendix 3. [145] In addition, if costs were to continue to be included in regressed costs (and as they are not modelled by a volume or activity driver in the regression – only network scale) this could lead to a perverse financial incentive for GDNs to minimise spend in these areas within the GD3 period – clearly not in customers' interest.

[144] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.62
[145] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1.3

As noted in our Business Plan submission, levels of vulnerability costs now within baseline totex to be excluded from regressed costs are set out in Table 16 below:

Table 18: BAU Vulnerability costs within baseline to be excluded (£m, 23/24 prices)

Submitted Costs		BPDT M8.14 Bespoke, Uncertain and Separate Activities					
		RIIO-GD3					
		2027	2028	2029	2030	2031	Total
EoE	Vulnerability costs within baseline totex	1.71	1.71	1.71	1.71	1.71	8.55
Lon	Vulnerability costs within baseline totex	0.98	0.98	0.98	0.98	0.98	4.90
NW	Vulnerability costs within baseline totex	1.15	1.15	1.15	1.15	1.15	5.75
WM	Vulnerability costs within baseline totex	0.85	0.85	0.85	0.85	0.85	4.25
Cadent		4.69	4.69	4.69	4.69	4.69	23.45

B.2.3 We disagree that our Flow Weighted Average Calorific Value Metering (FWACV) Systems project should not be excluded from regressed costs

Our response to this question should be read alongside CADQ1.

In our RIIO-3 Business Plan we proposed that our FWACV project should be excluded from regressed costs and subject to technical assessment. We felt this was the appropriate cost treatment given that this project meets Ofgem's criteria for exclusion as:

- costs are inappropriate for comparative benchmarking because they are only incurred by a small number of GDNs (we did not expect other GDNs to incur similar costs);
- costs are not explained by the cost drivers used in Ofgem's cost models (in this case, the cost driver applied is MEAV) [146];
- the project is large (>£5m) in value and abnormal; and
- at RIIO-GD2 this project was excluded from regressed costs.

In respect of the latter point, Ofgem is inconsistent in not removing these costs for RIIO-3. There are examples of other investments proposed by other GDNs (notably SGN's MP/IP services programme) where Ofgem has made a different decision to continue to exclude costs between RIIO-GD2 and RIIO-GD3.

Ofgem rejects our exclusion proposal in its Draft Determination, but offers little explanation as to why. Through our engagement post Draft Determination with Ofgem's cost assessment team, we understand this was a deliberate choice made and the project was not excluded as Ofgem believed other networks to have similar work within their Business Plans, based on discussions at the Cost Assessment Working Group (CAWG). However, to date no detail has been set out in published documentation to show this.

As a result of these observations and the evidence set out in our Business Plan, we see no justification for not excluding the costs associated with this project as set out in the Table below.[147]

[146] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.1.4
[147] Full annual costs required for exclusion from benchmarking for RIIO-2 years can be found in Table M8.14 of each of our networks' BPDTs

Table 19: Flow Weighted Average Calorific Value (FWACV) Metering Systems costs to be excluded (£m, 23/24 prices)

[redacted]

B.2.4 Ofgem has erred in not excluding Robotic Intervention costs or amending the Repex Synthetic cost driver

In our Business Plan, we noted that at RIIO-GD2, Ofgem's BPDTs treated costs and volumes related to Robotic Intervention in a table known as a 'memo table'. The costs and volumes in the memo table were also included in other core repex tables which were then summed to derive overall repex costs and volumes. However, in the RIIO-GD2 RRPs and RIIO-GD3 BPDTs, the Robotic Intervention table is now treated in the same way as other repex tables and is now *not* a memo table. This means that robotic intervention costs and volumes do not feed into the calculation of the repex synthetic cost driver for Ofgem's RIIO-GD3 Draft Determination model. A clear and material computational error in the application of Ofgem's methodology, where all non-excluded repex volumes and costs should be reflected in the repex synthetic cost driver.

The change needed to Ofgem's Draft Determination approach to remedy this error is either to:

- feed volumes within CV6.12 of the RIIO-GD3 BPDTs – which contains costs and volumes related to robotic intervention – into the repex synthetic cost driver and to develop a specific synthetic unit cost; or
- if this is not feasible, exclude costs and volumes from comparative assessment and assess this activity separately.

In our Business Plan, we did not advocate a particular approach, but noted that an amendment to Ofgem's RIIO-GD2 approach was required.[148] Otherwise, costs for this work will be treated as an effective 'overhead' within modelling, giving an inaccurate efficiency assessment. This is particularly problematic as robotic intervention costs are incurred disproportionately among a small number of networks, largely serving London customers and customers in urban settings, where its advantages are most pronounced. This was confirmed in our review of the level of costs and volumes across networks in BPDTs for RIIO-GD3 as set out in the Table below, *only* Cadent networks forecast any costs and volumes of activity for robotic intervention in RIIO-3. We note that SGN's Southern network did have costs and volume for this activity in their BPDTs, but only for the RIIO-GD1 and RIIO-GD2 periods.

[148] For our Business Plan we excluded costs from comparative analysis as RIIO-3 BPDTs and associated data were not available to us at the time of submitting our plan to assess a synthetic cost approach.

Table 20: Repex - Robotic Intervention forecast costs in RIIO-3, all networks (non-Cadent networks forecast zero)

[redacted]

Not amending the RIIO-GD2 approach would therefore constitute a clear computational error as Ofgem is not applying its methodology as stated, and discriminates against and penalises our networks unfairly for using this technology. In doing so, this also strongly disincentivise us from using this technology in period.

At Draft Determination, Ofgem rejected our proposed changes, stating that exclusion of this activity and its costs did not meet the criteria set out for cost exclusion. However, no change to the Repex Synthetic cost driver was made to account for these volumes – leading to the error and consequences noted above.

Having now been provided with BPDTs from all GDNs we have been able to assess whether synthetic unit costs can be developed and have considered two options for producing an appropriate addition to Ofgem's repex synthetic cost driver.

Approach 1

Under this approach, we simply add Robotic Intervention volumes to the corresponding diameter bands for Tier 2B and Tier 3 mains commissioned (these are the asset categories for which robotic intervention is forecast to be used for), treating them the same as conventional replacement techniques in the repex synthetic. Under this approach, the unit cost that we apply to the Robotic Intervention volumes is materially higher than the unit costs implied by our RIIO-GD3 BPDT data (for Robotic Intervention). This approach has the benefit of strongly incentivising GDNs to use this type of technique over conventional mains replacement approaches when appropriate.

When this approach is applied in our Cadent Error-Corrected model, our analysis shows an increase in our allowances of £35.5m. This results from improvements in the efficiency scores of our networks as the workload undertaken is now reflected in the repex synthetic cost driver relative to the costs. The tables below show these impacts and Annex GDQ36 – 4 details the calculations undertaken to derive the synthetic cost driver based on this approach.

Approach 2

Under this approach, we calculate four Robotic Intervention synthetic unit costs (one for each of diameter bands F, G, H, and I) based on BPDT data for the GDNs reporting robotic intervention activity (Cadent networks and SGN's Southern network[149]). We then multiply this by equivalent volumes to calculate a synthetic Robotic Intervention cost for each GDN, and finally add this synthetic Robotic Intervention cost to the repex synthetic cost driver. This approach directly creates an analogous component of the repex synthetic cost driver to other types of repex workload, and whilst

[149] SGN's Southern network reported costs associated with Robotic Intervention for RIIO-GD1 and RIIO-GD2, but volumes only for RIIO-GD2. Therefore, we have only been able to use SGN's RIIO-GD2 data for incorporation in the synthetic unit cost.

does not as strongly incentivise GDNs to use this technique as in Approach 1, does remedy the error and disincentives in Ofgem's current approach.

When this approach is applied in our Cadent Error-Corrected model, our analysis shows an increase in our allowance of £18.34m. This also results from improvements in the efficiency scores of our networks as the workload undertaken is now reflected in the repex synthetic cost driver relative to the costs. The tables below show these impacts and Annex GDQ36 – 4 details the calculations undertaken to derive the synthetic cost driver based on this approach.

Table 21: GD3 Efficiency scores and rankings with Robotic Intervention error remedied

GDN	Cadent Error-Corrected model		Approach 1		Approach 2	
	Ef. Score	Rank	Ef. Score	Rank	Ef. Score	Rank
EoE	0.96	3	0.95	2	0.96	3
Lo	1.04	7	1.02	6	1.03	6
NW	1.01	5	1.01	5	1.01	5
WM	0.94	1	0.94	1	0.94	1
NGN	0.96	4	0.97	4	0.96	4
Sc	0.96	2	0.96	3	0.96	2
So	1.03	6	1.04	7	1.03	7
WWU	1.15	8	1.15	8	1.15	8

Source: Cadent Analysis

Table 22: Total GD3 Allowances with Robotic Intervention error remedied (£m, 23/24 prices)

GDN	Cadent Error-Corrected model	Approach 1	Approach 2
EoE	2,129.93	2,141.60	2,134.95
Lo	1,676.67	1,705.79	1,687.47
NW	1,439.22	1,432.74	1,438.86
WM	1,135.13	1,136.27	1,137.98
NGN	1,542.63	1,531.36	1,540.63
Sc	1,091.82	1,083.38	1,090.62
So	2,438.78	2,424.11	2,436.02
WWU	1,564.09	1,553.17	1,562.25
Cadent	**6,380.96**	**6,416.40**	**6,399.26**

Source: Cadent Analysis

A comparison of the synthetic unit costs between the options is shown also in the Table below.

Table 23 Comparison of Synthetic unit costs utilised under Approach 1 and Approach 2

Diameter band	Approach 1	Approach 2
	£	£
Tier 2B, band F	1,089,684	556,883
Tier 2B, band G	1,636,896	783,655
Tier 3, band H	2,432,964	673,048
Tier 3, band I	2,432,964	897,737

Source: Cadent Analysis

Note that, for Approach 1, the diameter dimensions in our BPDT CV6.12 do not perfectly match Ofgem's categorisation of unit costs, so we have had to assume which unit costs apply.

We consider Approach 2 to be the more appropriate approach for Ofgem to apply at Final Determination as it is based on specific synthetic unit costs of Robotic Intervention activities, rather than more expensive conventional mains replacement techniques that could alternatively be used. We note this approach also is more conservative as the change in allowance is more muted.

Ahead of Final Determinations we will engage with Ofgem and other GDNs on this error and the approach to incorporate our newly developed addition to the repex synthetic cost driver to take account of Robotic Intervention volumes and costs. However, should Ofgem not accept this proposal for Final Determinations, it is important that the costs for this activity are excluded from their regression analysis for the reasons set out above. Were no change to the Draft Determination approach to be made this would be a clear and demonstrable computational error in Ofgem's approach.

B.3 We also agree with Ofgem's decisions made not to exclude costs proposed by other GDNs, having analysed their proposals

As part of their Business Plans, both SGN and Wales and the West Utilities (WWU) made several proposals for costs to be excluded from the comparative benchmarking. Having reviewed these proposals Ofgem rejected the following at Draft Determination:

- SGN:
  - Complex engineering schemes
  - Bulk Services replacement
  - Offtakes – local gas treatment
  - Pressure Control and Asset health
  - Isle of Grain
- WWU:
  - Large Capital Projects
  - Information Technology & Telecoms
  - Disconnections
  - Mains In Private
  - Non PSUP Physical Security
  - Zero Emissions Vehicle (ZEV) Infrastructure
  - Land and Buildings

We also agree with Ofgem's approach to not exclude these costs. Our reasons for agreeing with Ofgem's approach are set out below.

B.3.1 SGN proposals

Complex Engineering Schemes

In its Draft Determination, Ofgem rejected SGN's proposal to exclude Complex Engineering Schemes costs, describing it as not meeting the criteria set out in its SSMD for separate assessment.[150] We agree with this assessment as, from what we have been able to discern, SGNs method for designing and planning this work at a scheme level is the only characteristic they have described as making it merit separate assessment, which we do not agree with. We use a similar approach in planning work across our repex programme (the costs of which are included in the totex regression), with further details on our approach to designing programmes of mains replacement work set out in our EJP submissions:

- EJP08-Mains IMRRP (including Associated below=2" Steel
- EJP09-Cost Beneficial Mains Replacement
- EJP09-SE- Cost Beneficial Mains Replacement, Annex C

Consequently, the costs and workload identified by SGN are not unique and not outside of normal planning bounds. There is also no evidence presented of any unique complexity of the delivery of the work set out by SGN or elevated costs. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Bulk Services replacement

SGN proposed that its RIIO-GD3 Bulk Services programme should be excluded from Ofgem's regression benchmarking claiming in its BPDT submission that there was a risk that this type of workload is not treated consistently across all network plans. We note that the decision not to exclude this cost is consistent with the RIIO-GD2 treatment of this activity as the Bulk Services programme for RIIO-2 was included in the regression analysis as part of Services Not Associated with Mains Replacement[151].

This type of work is not unique, or uncommon. It is referred to by us as Bulk Steel Service Replacement (BSSR) and is a proactive programme of work targeting areas of historically high service failure rates. An analogous programme of work is carried out across all our networks. The details of our programme are in EJP05-Services Not Associated with Mains Replacement, with cost and volume detailed on each of our network's BPDT 6.08 Repex Services and which has been benchmarked in the regression analysis. Specific service volume and costs for our networks in our business plan are set out in the table below:

[150] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex", paras 5.36-5.37
[151] Ofgem, RIIO-GD2 Final Determinations, SGN Annex (revised), Table 35 footnote.

Table 24: Cadent Bulk Services Replacement costs and volume

[redacted]

Consequently, the costs and workload identified by SGN are not unique. There is no evidence presented on any unique complexity of the work or elevated costs. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Offtakes - Local Gas Treatment (LGT)

SGN's Offtakes – LGT capex project seeks to renew ageing and deteriorating elements of both of its networks.[152] SGN proposed that its project was separately assessed due "*to the lack of comparator data to perform statistical benchmarking*"[153]. As part of Ofgem's engineering and technical review, it assessed SGN's proposal as unjustified and disallowed the work.[154] However, were a different decision to be reached at Final Determinations (upon Ofgem's reconsideration of evidence providing firm justification), we think it is important that these costs are assessed via regression analysis and not excluded from comparative benchmarking. The costs and workload identified by SGN are not unique. We can cite similar work in our RIIO-GD3 business plan and should Ofgem need further details, we can provide this upon request.

Pressure Control and Asset Health

SGN described this project as a bespoke output and a project to replace the population of all high-risk dual-acting Audco Lineguard primary protective devices and ERS regulators across their network along with some additional capital investment.[155]

[152] SGN (2024) "SGN-GD3-EJP-E&I-003-LGT-Final Version-1.0 Redacted"
[153] SGN (2024) "SGN-GD3-SD-08-Cost-assessment-and-Benchmarking-Approach Redacted V2", pg 83
[154] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex", para 5.14
[155] SGN (2024) "SGN-GD3-EJP-LTS-008-Pressure-Control-Asset-Health-Final-Version-1.0 Redacted"

At Draft Determination, Ofgem rejected SGN's exclusion proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[156] We agree with Ofgem's assessment as:

- through RIIO-GD1 and RIIO-GD2 we replaced all our Audco Lineguards systems and this work was included in our base plans and therefore not separately assessed. Planned work on our remaining couple of high pressure ERS regulators, is likewise included in our base plan; and
- in our RIIO-GD3 plan the work highlighted in our EJP17 Pressure Reduction on Offtakes and PRS for pressure reduction on Offtakes and PRS, is similar to the work on these types of assets that SGN have highlighted in this and other exclusion proposals (Glen Mavis, Isle of Grain and Functional Safety projects). However, our similar activities are set out in a disaggregated way across our Asset Investment Plan. Should Ofgem require details of this work we could provide this on request.

Consequently, the costs and workload identified by SGN are not unique. There is no evidence presented by SGN on any unique complexity of the work elevated costs. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Isle of Grain (PRS)

From the available documentation we have been able to review, SGN described this project as a bespoke output and a full system rebuild of its Isle of Grain PRS including odorant system replacement. They also note that the asset is located within a third-party upper-tier Control of Major Accident Hazards (COMAH) site)[157]. At Draft Determination, Ofgem rejected SGN's exclusion proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[158] However, we also note Ofgem's decision to combine some of SGN's proposals and incorporate this project (along with the Glenmavis System Rebuild and Rationalisation project) into the Full Site and System Rebuild project.[159] Therefore, since Ofgem proposes to fund this via the Full Site and System Rebuild PCD, Ofgem's actual intentions are unclear – which we will seek to clarify via further engagement.

Assuming Ofgem's intent is not to exclude costs associated with this project, we agree with Ofgem's decision, as we have similar work within our business plan highlighted in our EJP17 Pressure Reduction on Offtakes and PRS for pressure reduction on Offtakes and PRS. This EJP's costs have been provisionally disallowed. However, for several EJPs including this one, we are providing Ofgem with comprehensive data, additional summary tables and covering narrative to aid understanding and provide line of sight to the data in the EJP and BPDTs. This will enable Ofgem to complete a full assessment of our proposed work to support allowing it at Final Determinations (refer to our response to CADQ14 for further information).

That said, as the proposed investment has to operate within the bounds of a COMAH site it may be subject to additional planning and/or design requirements. We are familiar with these from work we do and have undertaken in the past. As a result, instead of exclusion we propose Ofgem ask SGN to propose a Company-Specific Factor adjustment for the additional costs the COMAH designation creates relative to other works without this status. If the claim is then accepted by Ofgem, then having applied it, the net amount (i.e. gross costs minus allowed Company-Specific Factor claim) should be benchmarked within the totex regression analysis. However, without evidence to prove this represents a Company-Specific Factor for SGN, the costs associated with this activity should be included within the totex regression

[156] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex", paras 5.36-5.37
[157] SGN (2024) "SGN-GD3-EJP-LTS-004-Isle-of-Grain-Final-Version-1.0 Redacted"
[158] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex" paras 5.36-5.37
[159] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex" para 2.3

B.3.2 WWU proposals

Large Capital Projects

In its Business Plan, WWU proposed large capital projects for separate assessment. Having reviewed the WWU Business Plan, we understand that these projects relate to the replacement of certain older LTS pipelines experiencing integrity related leakage.[160] However, we have not seen any further commentary on the justification for exclusion of these costs and are unable to assess the potential for exclusion of these costs as the associated documents are redacted and/or not published.[161]

Information & Technology and Telecoms

In its Business Plan, WWU claimed that there are no specific cost drivers in Ofgem's regression analysis that would capture a 'step-change' in ongoing Cyber and IT&T operating costs, and urged Ofgem to conduct a more thorough, separate assessment of IT&T expenditure separate to regression analysis.[162]

At Draft Determination, whilst Ofgem did exclude Cyber related costs, they did not exclude IT&T costs, describing it as not meeting the criteria set out in its SSMD for separate assessment.[163] We agree with Ofgem's decision in line with our views communicated to the RIIO-GD2 Draft Determination and the change Ofgem made to include all IT&T opex and capex in regressed costs for RIIO-GD2 Final Determination. Ofgem stated that it agreed '*with the respondents* [to the RIIO-GD2 Draft Determinations] *that commented that, in order to better account for opex/capex trade-offs and avoid benchmarking results being affected by companies' IT strategy, not only IT and Telecoms opex but also capex should be included in totex'*.[164]

Disconnections

In its Business Plan, WWU proposed that disconnection costs have been estimated based on different volume assumptions and should be removed from regressed costs to avoid any adverse comparative efficiency impact. At Draft Determinations, Ofgem rejected WWU's proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[165] Without further information being provided to evidence the difference in volumes between GDNs it is difficult to see how this proposal can be accepted. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Mains in Private

In its Business Plan, WWU proposed separate assessment for mains replacement work where the location of mains is in private premises arguing that:

- WWU has a disproportionately higher volume of <2" steel mains decommissioned in the first three years of RIIO-GD2;
- a disproportionately higher volume of <2" steel mains are within private premises – noting that consistent with location in private premises, greater than 20% of <2" steel mains for RIIO-GD3 would require relocation"[166]; and
- they incur a differential in unit cost for this type of work because:
  - it may include a meter relocation and service relay
  - replacement would likely need to be undertaken by an open cut method at higher cost compared to the cheaper alternative method of insertion.

[160] WWU (2024) " WWU 60-cost-assessment-and-benchmarking-approach-redacted," page 81
[161] WWU (2024) " WWU 60-cost-assessment-and-benchmarking-approach-redacted", pg81 footnote 120.
[162] WWU (2024) " WWU 60-cost-assessment-and-benchmarking-approach-redacted", pg 79-80
[163] Ofgem (2025), "RIIO-3 Draft Determinations Wales & West Utilities Annex", para 5.34
[164] Ofgem (2021) "RIIO-GD2 Final Determination – GD Annex (revised)", para 3.38
[165] Ofgem (2025), "RIIO-3 Draft Determinations Wales & West Utilities Annex", para 5.34
[166] WWU (2024) "WWU 60-cost-assessment-and-benchmarking-approach-redacted", pg 82

We have analysed the arguments made and compared this to our own data and find that:

- whilst WWU does have the largest proportion of <2" steel mains replacement in RIIO-3 business plans, the cost differential for these volumes will be accounted for via the approach used to model repex through the totex regression, with <2" steel mains having their own synthetic unit costs which should account for any differential in costs on average from undertaking this work relative to other types of mains replacement;
- based on bespoke analysis we had undertaken in 2023, we estimate our networks have a similar ">20% level of mains located in private premises" when replacing <2" steel mains (between 31.7% and 42.6% across our networks)
- there is no evidence in WWUs Business plan to quantitatively evidence a differential in unit cost for volumes of mains in private work relative to other <2" steel mains replacement work.

This type of work is also within our Business Plan with volumes and associated costs not excluded from the totex regression. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Non PSUP Physical Security

WWU proposed that this activity should be separately assessed given its intrinsic link to cyber security and security of assets.[167] At Draft Determination, however, Ofgem did not exclude WWU's proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[168] Without further details to what has been published it has not been possible to assess this proposal.

Zero Emission Vehicle (ZEV) Infrastructure

At Draft Determination Ofgem rejected WWU's proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[169] Acquiring, operating and maintain infrastructure for ZEVs and infrastructure is an activity common to all GDNs. Including these costs within regressed costs would make the comparison of fleet costs more consistent between GDNs as a result, and consistent with our proposal for costs associated with electric vehicles to also be assessed via regression analysis. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

Land and Buildings

At Draft Determination, Ofgem rejected WWU's proposal, describing it as not meeting the criteria set out in its SSMD for separate assessment.[170] All GDNs incur property costs to facilitate operating and maintaining their networks and servicing customers' needs and as part of our plan we assessed whether network sparsity impacted the costs of delivering these activities. Our analysis showed there was no differential reason for, or quantitative evidence of, a difference in property costs due to sparsity. Therefore, we agree with Ofgem's Draft Determination assessment of this exclusion proposal.

B.4 We disagree, however, with some decisions made to exclude costs proposed by other GDNs, having analysed claims

As part of their Business Plan SGN made several proposals for excluded costs that Ofgem have accepted. However, we question whether the exclusion of these costs is correct and we think they warrant further consideration as we move towards Final Determination. Particular views we have on specific proposals are set out below.

[167] WWU (2024) "WWU 60-cost-assessment-and-benchmarking-approach-redacted", pg 83
[168] Ofgem (2025), "RIIO-3 Draft Determinations Wales & West Utilities Annex", para 5.34
[169] Ofgem (2025), "RIIO-3 Draft Determinations Wales & West Utilities Annex", para 5.34
[170] Ofgem (2025), "RIIO-3 Draft Determinations Wales & West Utilities Annex", para 5.34

B.4.1 Glenmavis Offtake

SGN described this project as a bespoke output and a targeted intervention to rebuild, replace and rationalise defective, ageing and redundant assets at Glenmavis Offtake.[171]Investment within offtakes is not unique and it is clear all GDNs have offtake investments within their investment plans for RIIO-GD3.

There are some specific examples of sites with a similar scope that we have identified within EJPs 15 and 17 in our Business Plan (where we have set out similar investments at a disaggregated level, rather than one large project as SGN have for Glenmavis)[172]. These EJPs' costs have been provisionally wholly or largely disallowed (EJP17 disallowed in full and EJP15 reduced by 93%). However, for several EJPs including these two, we are providing Ofgem with comprehensive data, additional summary tables and covering narrative to aid understanding and provide line of sight to the data in the EJPs and BPDTs. This will enable Ofgem to complete a full assessment to reconsider allowing this workload at Final Determinations (refer to our response to CADQ14 for further information).

Whilst SGN has presented its work as a standalone project and claim that it requires separate assessment owing to a lack of comparator projects for benchmarking, the presence of the same type of work in our plan shows this not to be the case. As a result, without further information to justify why the project is different to other comparable work in ours and potentially other GDNs' plans, it should be included in regressed costs at Final Determinations

B.4.2 Functional Safety

SGN's Functional Safety project is to address certain assets as at the end of their lifecycle which need to be brought up to current standards[173] Through Ofgem's Draft Determination pre-modelling engineering and technical review, it assessed SGN's proposal as unjustified and disallowed the costs.[174] However, were a different decision to be reached at Final Determinations (upon Ofgem's reconsideration of evidence providing firm justification), we think it is important that these costs are assessed via regression analysis and not excluded from comparative benchmarking. The costs and workload identified by SGN are not unique. We can cite similar work in our RIIO-GD3 business plan and should Ofgem need further details, we can provide this upon request.

B.4.3 Cams Hall

SGN proposed a project to replace the 12" steel intermediate pressure pipeline that crosses Fareham Creek and proposed that it should be separately assessed[175176]. At Draft Determination, Ofgem disallowed the costs, assessing the project as not justified and acknowledging that the Cams Hall project had been proposed and rejected in RIIO-GD2 and was proposed again for RIIO-GD3 at a higher cost. Cams Hall is located within a sealed sub-river tunnel and, although tunnels and river crossings are not unique to SGN, the fact it is sealed (based on SGN's actions) and cannot be maintained is the only unique feature. However, we have seen no evidence to show that this feature leads to an incremental efficient cost differential that would warrant adjusting for in Ofgem's benchmarking assessment.

[171] SGN (2024) "Engineering Justification Paper SGN-GD3-LTS-003 Glenmavis System Rebuild and Rationalisation Final Version 1.0 Redacted"
[172] Our activities are disaggregated across several lines of cost and volume and should Ofgem need further details on examples cited, we can provide this upon request.

[173] SGN (2024) "Engineering Justification Paper SGN-GD3-EJP-E&I-002 Functional Safety Final Version 1.0 Redacted"
[174] Ofgem (2025), "RIIO-3 Draft Determinations SGN Annex", Appendix 1
[175] SGN (2024) "Engineering Justification Paper SGN GD3-EJP-RPX-002"
[176] SGN (2024) "RIIO-3 Business Plan Final", pg. 75

B4.4 Welling (PRS)

SGN described this project as a bespoke output and project aiming to eliminate public safety risks from operating a transmission PRS in an urban area[177]. Whilst the integrity, safety and compliance concerns and the work to be delivered under this project are not unique or uncommon, the need to acquire suitable property with limited availability and likely high cost in the London area for a change in location may well present a cost challenge for SGN. Cadent operate and maintain similar assets to those mentioned in SGN's EJP. For example, in 2019 the Kenton AGI was rebuilt in our London network. The existing underground system was replaced with an above ground system within the existing site, located in an urban area of north-west London.

Given that the works to be completed under this project are not unique we do not believe cost exclusion is the appropriate treatment for the associated costs. However, as noted above we accept that higher population and property density which led to higher property and land prices in and around London may lead to incremental costs SGN has to incur to deliver it. As a result, we would propose Ofgem request SGN to compile a Company-Specific Factor claim for the additional costs SGN faces in undertaking this work in Welling relative to elsewhere in the UK. If the claim is then accepted by Ofgem, then having applied it, the net amount (i.e. gross costs minus allowed Company-Specific factor claim) should be benchmarked within the totex regression analysis. However, without evidence to prove this represents a Company-Specific Factor for SGN, the costs associated with this activity should be included within the totex regression

Section C Our response to other adjustments in Ofgem's Draft Determination – HSE Fatigue

At the beginning of RIIO-GD2, the HSE revised its directives associated with Fatigue legislation, the main change being a reduction from a maximum of sixteen to twelve hours continuous working, except in exceptional circumstances. GDNs are now moving towards full compliance with the HSE's revised directives at different speeds, with the result being that costs are being incurred by some GDNs earlier than others.

In that context, we believe that, in undertaking the comparative benchmarking, Ofgem's intention is to assume that no GDNs incur HSE fatigue related costs in the RIIO-GD2 period, but that all GDNs incur full costs of compliance for each year in the RIIO-GD3 period. To implement this, Ofgem has made a pre-modelling adjustment for the RIIO-GD2 period to remove the costs associated with the HSE's revised approach to fatigue legislation[178], but made no adjustment to costs in the GD3 period.

While we consider that the principle of Ofgem's approach is reasonable, we have a number of concerns over how it has been applied:

- **Our networks' assumed compliance date is incorrect:** Ofgem states that Cadent will be the latest to achieve compliance, with a completion date of 2028.[179] This is incorrect. As stated in our response to SQ051, Cadent expects to achieve full compliance in 2025/26, the last year of the GD2 period. This is also consistent with the cost data shown in the RIIO-2 & RIIO-3 Summary tab of our response to SQ051, which were completely flat across the GD3 period, having been marginally higher in 2025/26 – showing that our incremental cost in GD3 is zero.

- **The accuracy of the RIIO-GD2 figures removed in the Normalisation**: for NGN, SGN and WWU the amounts removed in the Normalisation files did not match the figures shown in the Draft Determination for the RIIO-GD2 HSE Fatigue Re-opener, being different in total by approx. £5m. Given that we were able to match or reconcile the figures used in the RIIO-GD2

[177] SGN (2024) Engineering Justification Paper SGN-GD3-EJP-LTS-009 Welling PRS Full Site Rebuild Final Version 1.0 Redacted
[178] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 5.123
[179] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 5.180

Re-opener Draft Determinations to those in the publicly available Re-opener claims, we believe there may be an error in the figures used within Ofgem's RIIO-GD3 Normalisation files in its costs modelling suite that should be assessed and remedied for Final Determination.

- **The costs of NGN and SGN should be adjusted upwards in the Normalisation of GD3 costs, before comparative benchmarking via regression**: only Cadent networks and WWU will be compliant with the HSE's revised requirements, by the start of the RIIO-GD3 period. Whereas we understand NGN and SGN will only be compliant part way through the RIIO-GD3 period. As a result, we believe an upwards adjustment will need to be made so that the costs of NGN and SGN are reflective of compliance across the RIIO-GD3 period to match Cadent and WWU networks. SGN's Business Plan assumes they will be compliant by 2030/31 [180] so their costs should be upwardly adjusted for years before this. However, it is unclear precisely when NGN will be compliant based on its Business Plan. We suggest Ofgem clarify the date of full compliance with NGN and make adjustments to normalisations as noted above to reflect this.

[180] SGN (2024) "RIIO-3 Business Plan Final", pg. 40

GDQ37. Do you agree with our proposed approach to totex benchmarking?

As noted in our response to GDQ32, we agree in principle with the use of top-down, totex benchmarking. However, Ofgem has taken a number of specific methodological decisions in the Draft Determination which risk underfunding GDNs' efficient costs and hence failing to achieve its statutory objectives. Moreover, Ofgem has made these methodological decisions based on analysis performed on an erroneous data set, and incorrect interpretation of post-regression statistical tests. We discuss the errors in Ofgem's Draft Determination model in GDQ32, and provide a full errata list in Annex GDQ32-1.

In this question we address both errors relating to the specification of Ofgem's regression model (Ofgem's rejection of a density model) and how it has set allowances based on the totex benchmarking model (a clear computational error in applying the net-to-gross ratio) in the Draft Determination.

Density

As explained in response to GDQ36, Ofgem's approach as set out in the Draft Determination has failed to set allowances that recognise the efficient cost of operating in London, by not making sufficient pre-modelling adjustments. In response to this GDQ37 we explain why including a density variable in the regression model specification would be a clearly superior approach to pre-modelling adjustments alone and, without prejudice to that position, at a minimum should be used as a cross-check on Ofgem's pre-modelling adjustments. Without sufficient pre-modelling adjustments, its omission of a density driver likely distorts results due to Omitted Variable Bias (OVB). This error in Ofgem's totex model results in a form of model misspecification leading to Ofgem setting erroneously low allowances for GDNs which operate in the London region. We discuss this further in **Section A** below.

In our RIIO-GD3 Business Plan, we outlined two alternative means by which Ofgem could account for the true, additional costs we incur from operating in a dense, urban environment:

- a set of pre-modelling regional and company-specific factors to normalise network costs for comparative benchmarking (which we discuss in our response GDQ36);[181] and
- a within-model density variable to quantify the relationship between network costs and density/sparsity (which we discuss in our response to this consultation question and which is, in our view, a clearly superior approach).[182]

We noted in our Business Plan why, of the two approaches, the within-model approach ("density model") is clearly the most likely to accurately reflect the true incremental cost that networks incur when operating in dense, urban environment, since using a density model avoids the challenges of identifying and quantifying specific factors, assessing their materiality, and accounting for their interactions consistently across regions.[183] A density model also has the benefit of capturing incremental costs that are not identified in a pre-modelling adjustment either because (i) there is no data available to quantify the cost impact; or (ii) the network does not have an incentive to declare the cost impact (i.e., for cost savings).

For our Draft Determination response, we estimated and validated the performance of the density model using the full 18 years of network data (we only had access to 13 years for our Business Plan submission). As we discuss in our response below, we find that the density model is an appropriate tool for Ofgem to set network allowances since it passes the relevant statistical tests, identifies an intuitive, and statistically significant cost-density relationship, and is unlikely to be overfitted to any one network in the dataset (including the London GDN). Without prejudice to our proposed set of pre-

181 Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section. 4.3.
182 Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section. 5.2.
183 Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section. 5.2.

modelling adjustments, the density model is therefore our preferred approach to set network allowances.

However, without prejudice to our view that this approach is clearly superior, if Ofgem were to decide that a density model is not appropriate to set, or even cross-validate network allowances, the pre-modelling adjustments we propose in our RIIO-GD3 Business Plan should at least be made instead. We describe in GDQ36 why our pre-modelling adjustments, which include Nature of Streets and a Company Specific Factor for our London GDN, that address several errors in Ofgem's proposed urbanity adjustments. Unlike Ofgem's RIIO-GD3 proposal, our pre-modelling adjustments also rely on the most recent, and reliable evidence and precedent from RIIO-ED2 to apply regional factor adjustments.

Error in applying the net-to-gross ratio in calculating allowances

In addition to Ofgem's failure to fully account for incremental density costs we incur, we have also identified a clear computational error in Ofgem's application of the net-to-gross ratio to its benchmarking results at Draft Determination which causes a significant understatement of our efficient allowed costs for GD3. We discuss this further in **Section B**.

Comments on potential changes in the Draft Determination methodology Ofgem may consider for Final Determination

In addition to the modelling approaches Ofgem has proposed at Draft Determination, we also have comments on considerations Ofgem has noted it will make in determining its approach for cost assessment at Final Determinations (either signalled in the Draft Determination, or discussed in Cost Assessment Working Group meetings):

- In **Section C** we discuss our concern with Ofgem's proposal to remove the forecast time trend "t2" variable from its totex regression model.

- Ofgem stated that it is "*cautious of introducing increased complexity into the repex synthetic cost driver or the CSV unless there is sufficient evidence that the issues are material, a modelling methodology can be defined which adequately reflects the cost driver, and that the issue can be consistently reported across all GDNs*".[184] We agree that, at present, data on repex complexity is not consistently reported across GDNs. In any case, if all GDNs face similar increases in complexity (and hence efficient costs), this will be accounted for within the regression through the repex synthetic unit costs, through the forecast time trend, and the practice of setting allowances based on an upper quartile/85th percentile adjustment to GDNs' business plan cost forecasts. We discuss this further in response to GDQ39.

- Ofgem stated that it has concerns "*about the justification for some of the Tier 1 mains workloads forecasts submitted by the GDNs in their Business Plans*".[185] Ofgem's concerns relate to the commissioned diameter bands and the lay-to-abandon ratios within the GDNs' forecast data. As discussed in our response to Ofgem's SQ102, our RIIO-3 forecast data is the best estimate we have of the commissioned diameter bands and the lay-to-abandon ratios for the forthcoming period. In its Draft Determination proposal, Ofgem has not made any adjustments to the GDNs' submitted data. We support this decision as any adjustments made to GDNs' submitted forecast data that are based on a priori assumptions of relevant factors, would distort the totex model's ability to estimate efficient costs from submitted Business Plan costs (which themselves are based on underlying diameter band and lay-to-abandon ratio figures), and hence allowances.

[184] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.219.
[185] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.220.

Adjustments to GDNs' GD3 allowances at Final Determination required to account for policy changes in National Insurance

In **Section D** we discuss the need for Ofgem to make an adjustment at Final Determination to account for the change in National Insurance policy announced in the Autumn 2024 Government Budget. This change in policy was not accounted for in GDN business plan submissions and increases costs to be faced by GDNs in RIIO-3 for reasons beyond their control. Before business plan submissions it was agreed with Ofgem to be accounted for at a later point in the setting of the RIIO-3 price control. To account for this, we have developed a post modelling adjustment approach based on ONS data that we have discussed with Ofgem and other GDNs.

We then summarise our proposals for changes to Ofgem's totex benchmarking approach in **Section E**.

Section A Ofgem fails to justify why a density model is not reliable

Since RIIO-GD1, Ofgem has relied solely on pre-modelling adjustments for labour, sparsity, and urbanity to account for regional cost differences between networks that are outside of management's control. In its RIIO-GD3 Draft Determination, Ofgem proposes to continue applying pre-modelling adjustments to account for regional factors that drive cost variation across networks. We respond to Ofgem's proposals for its pre-modelling adjustments at RIIO-GD3 in GDQ36.

In this section, we respond to Ofgem's decision to reject our RIIO-GD3 Business Plan proposal for a within-model adjustment that accounts for regional cost factors through a network density cost driver, which we consider to be a clearly superior approach to pre-modelling adjustments.

A.1 Ofgem errs in rejecting our proposal to use a "density model" to account for the additional cost of operating in London

As part of the RIIO-GD2 CMA appeals process, we proposed that Ofgem should use a density driver in its totex regression model to cross-validate the value of its pre-modelling regional factor adjustments. We found through this cross-validation exercise that Ofgem's Final Determination pre-modelling adjustments were insufficient to account for the additional costs of operating in London.[186] In its decision, the CMA stated Ofgem's approach to using pre-modelling adjustments was "*appropriate in the circumstances and within the bounds of its margin of discretion*."[187] It noted, however, that "*there is no clearly superior approach*" to doing so – with each of the two approaches (i.e. pre-modelling adjustments and within-model approaches) having merits and drawbacks.[188]

The CMA did not, therefore, establish that Ofgem should not use a density driver to set allowances. For RIIO-GD3 we continued to develop our analysis in a way that considers the merit of both pre-modelling adjustments and density models, aiming to improve on the RIIO-GD2 cost assessment framework.

In our RIIO-GD3 Business Plan, we proposed that Ofgem replace its pre-modelling adjustments for sparsity and urbanity with a within-modelling approach to quantity the relationship between network costs and density/sparsity (whilst maintaining a regional labour adjustment). Specifically, we proposed that Ofgem include a measure of network density in its totex regression to model the relationship between network costs and the density of the environment in which they operate.[189] We provided new evidence and detailed discussion of our approach to selecting an appropriate density variable (including consideration of relevant regulatory precedent), and measuring statistical performance (including overfitting tests) against Ofgem's RIIO-GD2 benchmarking model.[190]

186 Cadent (2021), "Notice of Appeal, Energy Licence Modification, RIIO-GD2 Price Control", para. 1.4.
187 CMA (2021) "ELMA Final Determination vol. 3", para. 10.276.
188 CMA (2021) "ELMA Final Determination vol. 3", para. 10.276.
189 We calculate network density as customer numbers per length of mains.
190 Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.76-77.

Thet able below shows the results of our proposed density model which we have now re-run on our error-corrected version of Ofgem's Draft Determination model (as described in response to GDQ32). We find that coefficient on the linear density term remains positive and statistically significant. The explanatory value of the density model (which we measure through adjusted R-squared) is also higher than the model Ofgem proposed a Draft Determination. The results of this regression, alongside the overfitting analysis we present in Section A.5 demonstrate the results are not unduly driven by the London GDN, and suggest the model is a superior tool to set allowances (and at minimum a valid and robust tool to cross-validate allowances set by pre-modelling adjustments).

Table 1: Density Model Results

	Cadent Error-Corrected Model	Network Density Model (with RLA)
Constant	-0.882***	-2.848***
Totex CSV	0.896***	0.915***
Density		0.416***
Adj. R-Squared	0.923	0.939
No. of Observations	144	144

*Note: Time trends were included in the regression but results not reported for brevity. * Indicates significant at the 10% significance level, ** 5% significance level, *** 1% significance level.*
Source: Cadent analysis.

In its RIIO-GD3 Draft Determination, Ofgem stated that it tested the performance of models that incorporated both linear and quadratic density terms in its base totex regression.[191] It also tested the density models both with and without the London GDN included (i.e., to check for model overfitting), and with and without its pre-modelling regional factors applied. Ofgem did not publish the results of its density model analysis in its Draft Determination.

Having performed this analysis, in its Draft Determination, Ofgem stated that it does not propose to use a totex model which incorporates a density driver to either set, or cross-validate allowances during RIIO-GD3.

As we discuss in GDQ36, Ofgem's proposed pre-modelling adjustments do not account for the true level of efficient density-related costs we incur. Given this, if Ofgem maintains its Draft Determination position, its failure to use a density variable means that its totex regression will suffer from Omitted Variable Bias. As a result, efficiency scores and allowances Ofgem sets under its proposed Draft Determination model will not reflect the true level of efficient costs for each network. This comprises a material error in Ofgem's RIIO-GD3 cost assessment methodology.

Ofgem offers four reasons to support its decision not to use a density variable in its totex model:[192]

1. Ofgem states that all models that incorporated a density function failed at least one statistical robustness test – specifically, the normality test. Ofgem states that this "*suggests models with a density variable may be mis-specified*".
2. It considers that models with a density variable are "*at odds with Ofgem's general approach of ensuring modelling choices have strong engineering and economic logic*".
3. It considers that a flaw in the density variable is that it applies to all of totex, in contrast to its pre-modelling regional factor adjustments that are "*targeted at specific cost categories where there is a demonstrable impact of regional environmental conditions on costs*".
4. Finally, Ofgem considers that "*using the density variable risks overfitting the model, making the results unreliable*".

[191] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.48.
[192] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.49-50.

We respond to each argument in turn below. We highlight errors in Ofgem's assessment as well as areas in which it has failed to consider new evidence we presented at RIIO-GD3. This supports our conclusion that Ofgem has failed to justify its decision to reject the density model as a tool to set (or at a minimum cross-validate) networks' allowances for RIIO-GD3.

A.2 Non-normality of error terms does not cause model misspecification

In its Draft Determination, Ofgem argues that almost all models it tested which included a density variable failed the normality test (see GDQ32 for a description of the normality test). It notes that non-normality of error terms "*can make hypothesis tests unreliable*", and "*suggests models with the density variable may be mis-specified*".[193] In this section, we discuss:

- why Ofgem is incorrect to assume that non-normality of errors might suggest the model is mis specified; and
- why, when we apply assumptions that Ofgem uses to justify other features of its econometric analysis, Ofgem is also incorrect to suggest that non-normality might make hypothesis tests unreliable.

A.2.1 Ofgem is incorrect to assume that non-normality of errors might suggest the model is mis specified

In small samples (i.e., samples that do not exhibit the asymptotic properties we discuss below), there are four key assumptions that an Ordinary Least Squares (OLS) regression must meet to generate unbiased estimates of the coefficients on each explanatory variable (the "model coefficients", in this case on the intercept, totex CSV, time trends, and network density variables).[194] Non-normality of errors is not a necessary assumption to generate unbiased OLS estimates of model coefficients.[195] In other words, as long as the four OLS assumptions are met, the error term of the regression need not follow a bell-shaped curve around a fixed mean, characterised by the normal distribution.

Importantly, the key assumption on the error term for ensuring an unbiased estimate of the model coefficients is that its expected value is equal to zero, conditional on any values of the independent variables. That is, there is no relationship (or "correlation") between the error term and any of the explanatory variables. This assumption might be violated if, for example, Ofgem omits a key driver from the regression that is correlated with one or more explanatory variables. A model with non-normal error terms that meets the four OLS assumptions is therefore not mis-specified, and can generate unbiased point estimates of, for example, modelled costs.

However, the model Ofgem proposed at Draft Determinations is unlikely to meet the OLS assumptions. It is likely that the model suffers from omitted variable bias since:

- Ofgem's proposed regional factors do not account for the true level of efficient density-related costs networks incur (which we demonstrate in our response to GDQ36);
- there is a positive, statistically significant relationship between network density and totex (removing all density-related pre-modelling adjustments); and
- we show the density model is not overfitted to London (see below).

To demonstrate Ofgem's pre-modelling adjustments do not adequately account for the incremental density costs that networks incur, we estimate a totex model with a linear density term and all Ofgem's proposed RIIO-GD3 regional factors. Were Ofgem's regional factors to adequately adjust for incremental density costs, we would not expect the density variable to capture a cost-density relationship. However, our analysis in Table 2 shows that, while the coefficient on the density variable reduces from 0.416 to 0.278, it remains positive and statistically significant. The density variable is

[193] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.49.
[194] For a full description of the four necessary assumptions to generate an unbiased OLS estimate of model coefficients, see: J. Wooldridge, Introductory Econometrics: A Modern Approach (5th edition), Ch. 3.3.
[195] Here we use "unbiased" to mean the expected value of the model coefficient equals the true population value.

therefore still capturing incremental density costs, even when we apply Ofgem's proposed RIIO-GD3 regional factors.

Table 2: Density Model with Ofgem Regional Factors Applied

	Cadent Error-Corrected Model	Network Density Model (with RLA)	Network Density Model with GD3 RFs
Regional Factors	RIIO-GD3 proposal	RLA only	RIIO-GD3 proposal
Constant	-0.882***	-2.848***	-2.230***
Totex CSV	0.896***	0.915***	0.912***
Density		0.416***	0.278***

*Note: Time trends were included in the regression but results not reported for brevity. * Indicates significant at the 10% significance level, ** 5% significance level, *** 1% significance level.*
Source: Cadent analysis.

Ofgem's predicted value of totex in its proposed Draft Determination model (i.e. the dependent variable in Ofgem's proposed regression) will therefore be distorted, due to the inadequate controls within the model for density-related costs and resulting bias caused to regression coefficients. Since non-normality of error terms is not a requirement to generate unbiased coefficient estimates, regulators in GB have historically used regression models to set allowances even when they fail the normality test. For example:

- In **Ofgem's** RIIO-ED2 Final Determinations, one of the three totex models (Model 3), and one of the disaggregated models (Faults and ONIs) it used to set DNOs' allowances failed the normality test at the 10% significance level.[196] Ofgem determined that Model 3 was still appropriate to set allowances, since "*normality of residuals is not required for OLS to derive unbiased coefficient estimates*".[197]
- In **Ofwat's** PR24 Final Determinations, it stated that it placed a "*low level of importance*" on the normality test, since "*model results are still unbiased and consistent*" with non-normal errors.[198] In total, 23 of the 39 regression models Ofwat used to set allowances in its Final Determination failed the normality test at the 10% significance level.[199]

Therefore, as we explain above, Ofgem can rely on regression models with non-normal errors to obtain unbiased point estimates of network costs. Ofgem's rejection of our proposals on this basis is, therefore, an error.

A.2.2 Ofgem is also incorrect to suggest that non-normality might make hypothesis tests unreliable, given other features of its econometric approach

In small samples, the normality of errors is a necessary assumption if Ofgem wishes to perform statistical inference on the model coefficients using standard t-tests. This is because normality of errors is a necessary condition for standardised model coefficient estimates to follow a t-distribution in small samples. Consequently, if Ofgem intends to conduct hypothesis tests on the model coefficients or build confidence intervals around network cost estimates in small samples, the distribution of the error term should be approximately normal.[200]

[196] Ofgem (2022), "RIIO-ED2 Draft Determination – Core Methodology Document, Appendix 1 – Econometric model results."
[197] Ofgem (2022), "RIIO-ED2 Draft Determination – Core Methodology Document", para. A1.6.
[198] Ofwat (2024), "PR24 final determinations: Expenditure allowances – Base cost modelling decision appendix", pp.62-63.
[199] Ofwat (2024), "PR24 final determinations: Expenditure allowances – Base cost modelling decision appendix", pp.64-80.
[200] For a full discussion of why normality of errors is necessary for statistical inference, see: J. Wooldridge, Introductory Econometrics: A Modern Approach (5th edition), Ch. 4.1.

However, large sample properties (or "asymptotic properties") mean that, under certain conditions, statistical inference that uses standard t-tests is possible even with non-normality of errors. There is no fixed sample size at which a regression exhibits asymptotic properties. Rather, a regression is said to have asymptotic properties where model parameter estimates do not significantly change as the sample size increases. Estimates that exhibit this property are sometimes called "consistent" estimates.[201]

Therefore, Ofgem can rely on both coefficient estimates and results from statistical inference on regression models that exhibit asymptotic properties, even where errors are non-normal. In the Draft Determination, Ofgem assumes its models have asymptotic properties to justify other economic methods it applies in its totex regression model. For example, it uses cluster-robust standard errors in its totex regression model, which also rely on asymptotic properties to be valid (themselves being biased in small samples).[202] Hence, it is inconsistent for Ofgem to state that non-normality of errors might make hypothesis tests unreliable. Therefore, again, Ofgem's rejection of our proposals on this basis is an error.

A. 3 Density models are not at odds with engineering and economic logic; Ofgem fails to justify and substantiate its view that they are

Ofgem states that models it tested with a density variable are "*at odds with Ofgem's general approach of ensuring modelling choices have strong engineering and economic logic*".[203] This is not correct, as explained below. In any event, Ofgem does not offer any evidence or logical arguments to support this position in its RIIO-GD3 Draft Determination. We cannot engage with Ofgem's decision making process where it fails to provide specific evidence, logical arguments or any justification at all to support the conclusions it reaches.

Ofgem already accepts that networks incur additional efficient costs from operating in a dense, urban environment. It has, over successive price controls, applied pre-modelling urbanity productivity and reinstatement adjustments to compensate networks for additional density-related costs they incur. In response to GDQ36, we demonstrate why the adjustments that Ofgem proposes in its Draft Determination to retain for RIIO-GD3 are insufficient to account for the additional costs of operating in London. Without prejudice to our position set out in this response to GDQ37 that a density variable approach is clearly superior, we also propose an alternative set of pre-modelling adjustments that are more closely related, to the true level of additional cost we incur, albeit they estimate these additional costs conservatively.

In principle, pre-modelling and within-model approaches are two alternative means to control for the same impact of density on network costs. The latter is, however, a clearly superior alternative as set out in this response. Ofgem has not demonstrated why there is engineering and economic rationale for a pre-modelling adjustment, but not a within-model approach.

In our SSMC response, we outlined the five-step process we followed to develop a list of candidate density variables.[204] One of the steps of our process was to establish that any density driver we selected makes economic and/or engineering sense. In our Business Plan, we provided evidence to demonstrate that network density (customer numbers/network length) meets this criterion:[205]

- Network density is **exogenous**, since management could not inflate this measure without significant, long-term investment that alters the length of network assets.
- Network density **explains the costs we incur** that are caused by the high concentration of customers the network must serve. In GDQ36, we discuss bottom-up analysis of our Nature of Streets, sparsity, and Network-Specific Factors proposals, which collectively account for the

[201] For a formal definition of consistency and asymptotic properties, see: J. Wooldridge, Introductory Econometrics: A Modern Approach (5th edition), Ch. 5.1.
[202] For more information on why cluster-robust standard errors require consistent properties, see: A. Cameron and L. Miller (2015), A Practitioner's Guide to Cluster-Robust Inference: II. Cluster-Robust Inference, pp. 3-5.
[203] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.50.
[204] Cadent (2024), "RIIO-3 Sector Specific Methodology Consultation – Cadent Response to Ofgem GD Annex", Q 57.
[205] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section 5.2. 5.2.

additional density (and sparsity) related costs that London-based networks incur. In each case, the degree to which a network incurs additional costs directly relates to the concentration of customers and, subsequently, network assets in its operating area. We also considered density measures which rely on population density as opposed to customer density and found that they were less relevant to explaining the costs associated with urbanity, since they include population segments that are not connected to the grid.

- Density models that use network density alongside the totex CSV have **higher explanatory power** (as measured using the adjusted R-squared) than Ofgem's totex model with pre-modelling adjustments applied. Our finding is consistent with Ofgem's own Draft Determinations, in which it found that the density models it tested had higher explanatory power than its base model.[206] Ofgem did note that its density models failed the normality test. However, as we discuss above, non-normality is not a valid reason to reject an in-model density approach.

- We show **the density model is not overfitted** to observations from the London network. When we remove three influential observations from the London GDN, we still find a positive, statistically significant relationship between network density and totex. We discuss overfitting of the density model further below.

Ofgem has previously raised concerns that the density model that we presented within the GD2 CMA appeal did not exhibit the "U-shape" that it expected (i.e. with costs increasing in areas of higher sparsity and higher density). In our Business Plan, we outlined why a pre-conceived concept of the shape of the relationship between density and costs should not be an acceptance criterion for Ofgem to use a density model:[207]

- As we describe in Section A.4 below, a totex-level density model reflects the net impact of additional sparsity, and density-related costs across networks. Evidence we have submitted demonstrates that density-related cost impacts are larger, and apply to a wider proportion of the totex base, than sparsity-related costs.[208] Ofgem also implicitly accepts this as its existing sparsity factors apply only to emergency, and repair opex cost areas, while its density cost adjustments relate to several opex, capex, and repex cost areas (accounting for a much larger share of totex). A sparse network therefore could foreseeably offset additional emergency and repair costs they incur by avoiding density-related costs.

- From our review of the academic literature and regulatory precedent on density models, we do not find consensus on a single appropriate functional form for a density model. At PR24, Ofwat used both quadratic and linear density variables to model companies' costs across activities.[209] Cost areas where Ofwat does find a "U-shape" might fundamentally differ for gas distribution networks, which, unlike water networks, are not universally rolled out in the most rural areas of the country. Further, studies from the German gas and electricity distribution sectors and the Slovenian electricity distribution sector only use linear density models, without changes in the relationship between costs and density at different levels of density.[210]

Ofgem is therefore incorrect to state that density models are at odds with its general approach of ensuring modelling choices have strong engineering and economic logic. In any event, Ofgem did not provide evidence to support why its statement was correct in the context of the density model we proposed, nor did it engage with our evidence to the contrary. As such, Ofgem's rejection of our proposals on this basis is, therefore, an error.

[206] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.49.
[207] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.79.
[208] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach, Table 16, p.38.
[209] Ofwat used quadratic density terms for wholesale water costs, and linear density terms for wastewater. See: Ofwat (2024), "PR24 Final Determinations: Expenditure allowances – Base cost modelling decision appendix," p.24-26 & 35-38.
[210] Schweter and Wetzel (2017), "Scale and scope of economies of German electricity and gas distribution networks", ENERGIO Working Paper, Nr. 9, Table 4. ; Filippini, Hrovatin and Zoric (2004), "Efficiency and regulation of the Slovenian electricity distribution companies", Energy Policy 32 (2004), P. 335-344.

A.4 Ofgem can estimate and apply density-cost relationships at the totex level

Ofgem considers that a flaw with using the density variable as an explanatory variable in its regression is that it applies to all of totex, in contrast to its pre-modelling adjustments that are "*targeted at specific cost categories where there is a demonstrable impact of regional environmental conditions on costs*".[211]

Ofgem raised the same argument to support its decision not to use a density model during the RIIO-GD2 appeals process.[212] The CMA did not consider this argument in its final decision on whether it should have applied a density driver cross-check.[213]

Ofgem's claim that the approach of including the density variable in the regression assumes it "applies to all of totex" is entirely inconsistent with how econometric modelling can be used to quantify the relationship between costs and cost drivers *in general*. The within-model approach we proposed in our Business Plan estimates the relationship between density and network costs at the totex level. The estimated coefficient on the density variable captures the incremental totex that a network incurs from a higher level of density in its operating area, holding constant other explanatory variables (i.e., workload and scale drivers in the totex CSV, and time trend variables).

The scale of the coefficient on the totex CSV will therefore directly reflect (i) the proportion of totex for which networks incur additional costs due to density effects; and (ii) the magnitude of additional density-related costs within these cost areas. If high-density networks only incur additional costs on a small proportion of totex, the regression will reflect a small coefficient on the density variable (potentially not statistically different from 0). Ofgem should apply this estimated cost-density relationship when setting totex allowances, since it allows a regression procedure to estimate the relationship at the totex level, rather than any a priori assumption.

As we note in our Business Plan, the coefficient on the density variable will not only scale to reflect the magnitude of incremental density-related costs networks incur, but the net impact of incremental sparsity and density costs.[214] This is true since the network density variable is an effective measure of both high population concentration (a dense network), and low concentration (a sparse network). Incremental costs for a dense network (e.g., related to underground work productivity, and other factors we discuss in GDQ36), are therefore offset by the incremental costs of operating a sparse network (e.g., to carry out emergency and repair work). The positive coefficient on the linear density variable (even when we remove London from the regression) demonstrates that the incremental totex impact of operating a sparse network is much smaller than the impact of operating a dense network. We note, that Ofgem implicitly accepts incremental density-related costs are higher and more widespread than sparsity-related costs in its existing pre-modelling adjustments.

Ofgem's reasoning is also inconsistent with its own past decisions. At RIIO-ED2, Ofgem used a 'capacity released' variable to control for "*the step up in reinforcement activities the DNOs forecast and for differences in demand scenarios*".[215] The purpose of the capacity released variable is therefore to control for reinforcement spend, which is only a subset of industry totex. However, Ofgem included the capacity released variable in its totex Model 2.

As such, in light of the above, Ofgem's rejection of our proposals on this basis is also, therefore, an error.

[211] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.50.
[212] CMA (2021) "ELMA Final Determination vol. 3", para. 10.247 (b).
[213] CMA (2021) "ELMA Final Determination vol. 3", para. 10.267-277.
[214] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", pg.79.
[215] Ofgem (2022) "RIIO-ED2 Final Determination – Core Methodology Document", para. 7.73.

A.5 Contrary to Ofgem's claim, the density model is not overfitted; in any event, Ofgem fails to provide evidence to say it is, or respond to our evidence that it is not

In its Draft Determination, Ofgem states that "*using the density variable risks overfitting the model, making the results unreliable*".[216] Potential overfitting of the density model was considered by the CMA in its assessment of our appeal regarding regional factor adjustments at RIIO-GD2. Therefore, in preparing our business plan, we paid close attention to ensuring the models we proposed did not suffer from overfitting.[217]

Ofgem does not offer any evidence or logical arguments to support its proposed finding in the RIIO-GD3 Draft Determination that the model including density would be overfitted, or why it disagreed with our new evidence. We cannot engage with Ofgem's reasons for its decisions when it fails to provide specific analysis or logical arguments to support the conclusions it reaches.

Nonetheless, reperforming the overfitting analysis we presented in our Business Plan on an error-corrected version of Ofgem's Draft Determination model confirms that the density model is not overfitted to London. To verify that the density model is not overfitted to London we performed three alternative tests:

1. We estimate the baseline density model **excluding the London GDN from the sample**. We find the coefficient on the Network Density variable to be stable at 0.40 (compared to 0.42 when we include London). The stable coefficient indicates the relationship between cost and network density do not materially change whether we include London or not.
2. Next, we estimate the baseline density model with a **London Dummy Variable** (DV) which is equal to 1 for all London GDN observations, and 0 otherwise. We again find the coefficient on Network Density variable to be stable at 0.40 (compared to 0.42 when we do not include a London DV). These results indicate that the density driver is not simply acting as a "London dummy", and again, suggest overfitting is not a concern for these models.
3. Finally, we assess whether there are **influential observations** (i.e., for a single network, in a single year) which might disproportionately be driving coefficient estimates in the model, and in doing so lead to overfitting. We do so by (i) seeking to identify the presence of these potentially influential observations and (ii) re-estimating the density model having removed any influential observations to check for overfitting:
    i. We first identify influential observations in the sample. Influential observations are disproportionately responsible for determining model parameter estimates. We identify these using a standard econometric tool that measures the change in model estimates when we omit a single observation.[218] Across all networks and years, we found three potentially influential observations, all associated with the London GDN. Finding influential observations does not, in and of itself, suggest overfitting in a model. Instead, we are interested in whether the estimated relationship between totex and density substantially changes when we remove influential observations (which we do in the next step).[219]
    ii. We remove the three influential observations from the sample and re-estimate our proposed density model. We find that the coefficient on density remains stable at 0.38 (compared to 0.42 when we do not include influential observations), and density remains statistically significant at the 1% significance level.

We present the results of our overfitting test in the table below.

[216] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.50.
[217] Cadent (2024), "RIIO-3 Business Plan: Appendix 3: Cost Assessment and Benchmarking Approach", pg. 80-81.
[218] We identify influential observations using a Standardised DFBETA test (Ramzi W. Nahhas (13 October 2024), Introduction for Regression Methods for Public Health Using R, Section 5.22). The DFBETA test estimates the regression with and without each observation and measures the difference in coefficient estimates. It standardises the difference in coefficients by the parameter standard error under the full-sample model. We compare the standardised DFBETA values to a cutoff of 0.2 (Harrel 2015, P.504). We treat an observation with an absolute DFBETA value greater than this cutoff as influential.
[219] For context, when we perform the same Standardised DFBETA test on Ofgem's proposed totex model, we find there are five influential observations on the totex CSV variable, associated with the EoE, Sc, and So GDNs.

Table 3: Density Model Is Not Sensitive to Removing Influential Observations

	Network Density Model (with RLA)	Network Density Model (with RLA, no influential obs.)
Constant	-2.848***	-2.682***
Totex CSV	0.915***	0.916***
Density	0.416***	0.377***
Adj. R-Squared	0.923	0.940
No. of Observations	144	141

*Note: Time trends were included in the regression but results not reported for brevity. * Indicates significant at the 10% significance level, ** 5% significance level, *** 1% significance level.*
Source: Cadent analysis.

Across the three overfitting tests we performed, we therefore conclude that our proposed density model is not overfitted to the London GDN.

Ofgem fails to engage with our RIIO-GD3 Business Plan evidence on overfitting of the density model we proposed.

A.6 Conclusion on Ofgem's decision not to use a density model

Ofgem has failed to explain or justify the basis for its Draft Determination position that a density model is not reliable as a tool to set, or cross-validate, the allowances it sets for networks at RIIO-GD3. The evidence indicates that such a model is a clearly superior alternative to pre-modelling adjustments alone and, without prejudice to that position, at a minimum, should be used as a cross-check on Ofgem's pre-modelling adjustments.

In particular, in its Draft Determination, Ofgem asserts econometric problems, without providing evidence to demonstrate the problems arise or quantify their impact, and in some cases Ofgem applies econometric tests inappropriately:

1. it provides incorrect statements regarding the econometric methods it used, i.e. regarding non-normality of errors (see Section A.2), and the economic interpretation of models that include a density variable (see Section A.4).

2. its claims that the density models we proposed are at odds with engineering and economic logic are unsupported and incorrect (see Section A.3), and, contrary to Ofgem's assertion in the Draft Determination, we have shown that the density models we propose are not overfitted (see Section A.5).

Ofgem also failed to respond substantively to the detailed, highly relevant, new evidence we put forward in our Business Plan on the role density modelling can play in calibrating or validating the GD3 cost assessment results.

Ofgem's failure to consider a density modelling approach, alongside its rejection of our proposed pre-modelling adjustments to cross check network allowances, has resulted in it significantly underestimating the level of efficient cost we incur in our London network, and constitutes a serious error in its RIIO-GD3 cost assessment approach.

In its Final Determination, Ofgem should correct the errors identified above as regards its assessment of our density model and accept that such an approach is a clearly superior alternative to pre-modelling adjustments alone and, without prejudice to that position, at a minimum, should be at a minimum used as a cross-check on Ofgem's pre-modelling adjustments

The tables below show the impact on GDNs' efficiency scores and allowances of accepting our proposal to use a density model.

Table 4: GDNs Allowances: Cadent Error-Corrected DD Model vs. Network Density Model (£m, 2023/24)

	Cadent Error-Corrected Model	Network Density Model (with RLA)	
	Efficiency Score	*Efficiency Score*	*Delta to Corrected Model*
EoE	0.96	0.96	0.003
Lon	1.04	0.97	-0.071
NW	1.01	1.01	-0.001
WM	0.94	0.93	-0.007
NGN	0.96	1.01	0.048
Sc	0.96	0.99	0.030
So	1.03	1.02	-0.012
WWU	1.15	1.17	0.026
85th percentile	**0.957**	**0.958**	**0.001**

Note: Efficiency scores calculated as the ratio of submitted costs to modelled cost over RIIO-GD3.
Source: Cadent Analysis

Table 5: GDNs Allowances: Cadent Error-Corrected DD Model vs. Network Density Model (£m, 2023/24)

	Cadent Error-Corrected Model	Network Density Model (with RLA)	
	Allowance	*Allowance*	*Delta to Corrected DD Model*
EoE	2,129.93	2,142.39	12.46
Lon	1,676.67	1,772.69	96.02
NW	1,439.22	1,445.61	6.38
WM	1,135.13	1,147.30	12.17
NGN	1,542.63	1,475.52	-67.11
Sc	1,091.82	1,064.26	-27.56
So	2,438.78	2,470.50	31.71
WWU	1,564.09	1,538.51	-25.58
Cadent Total	**6,380.96**	**6,507.99**	**127.04**
Industry Total	**13,018.28**	**13,056.79**	**38.50**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent Analysis

A.7 The use of multiple models (including our density model) would mitigate the risk of over-reliance on a single model

In its RIIO-GD3 Draft Determinations, Ofgem proposes to assess the majority of costs (84% of totex) via regression modelling.[220] For its regression modelling, Ofgem proposes to rely on a single totex model.[221] Ofgem's decision to rely on a single totex model for gas distribution cost assessment is unusual in the context of regulatory precedent. For instance, at the RIIO-ED2 price control for the electricity distribution sector, Ofgem relied on a combination of multiple models to set allowances,[222] noting that using multiple models *"helps with the overall reliability of [the] modelling suite"* and *"ensures that no single approach is deterministic in [the] assessment of the efficiency of DNO expenditure"*.[223] Ofgem then assigned a weight to the outcome of each model in the determination of efficient cost allowances.[224] Similarly, at its recent PR24 price control, Ofwat (the water sector regulator) also relied on multiple econometric models to estimate efficient costs, and then set allowances by assigning a weight to the outcome of each model.[225]

Given that Ofgem itself uses multiple econometric models to set cost allowances at other price controls (RIIO-ED2), we disagree with Ofgem's use of a single Totex model at RIIO-GD3. As discussed above, Ofgem's proposed model suffers from misspecification which results in underestimating allowances for GDNs operating in the London region. Therefore, even though we consider that a density driver approach is clearly superior, Ofgem should, at a minimum, use a combination of its proposed totex model (including our other proposals contained within this DD response, including relating to regional and company-specific factors) and a totex model including a density variable, with appropriate pre modelling adjustments also made (i.e. the improved RLA applied, as discussed above) to estimate efficient costs. Under this multiple-model approach, Ofgem could set allowances by averaging across the two totex models, and hence mitigate the risk of over-reliance on a single model.

Section B Ofgem has incorrectly applied the net-to-gross ratio to calculate GDNs' allowances

B.1 Background and explanation of Ofgem's logical inconsistency and computational error

Ofgem's totex assessment includes the following steps:

1. Collect business plan submissions from GDNs on workloads and costs (gross and net).
2. Apply pre-modelling adjustments, including workload adjustments (where Ofgem disallows costs for activities deemed to be inefficient or moves workload/costs from baseline totex to reopeners/uncertainty mechanisms and exclusions (identifying costs that need to be assessed separately by a means other than regression – e.g. larger or more bespoke projects).
3. Run the following separate processes depending on the type of costs:
    a. For costs to be assessed via comparative regression benchmarking (i.e. excluding disallowed workload, costs moved to reopeners/uncertainty mechanisms and costs to be modelled on a non-regression basis or technically assessed), perform the comparative benchmarking based on gross costs;
    b. For costs to be modelled on a non-regression basis, perform the separate assessment modelling (based on gross costs); and
    c. For costs to be technically assessed, carry out those technical assessments.
4. Apply post-modelling adjustments, including:

[220] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution", para. 5.59.
[221] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution", para. 5.32.
[222] Ofgem (2022), "RIIO-ED2 Final Determinations – Core Methodology", para. 7.14.
[223] Ofgem (2022). "RIIO-ED2 Draft Determinations – Core Methodology", para 7.13.
[224] Ofgem (2022), "RIIO-ED2 Final Determinations – Core Methodology", para. 7.581.
[225] Ofwat (2024), "PR24 final determinations: Expenditure allowances – Base cost modelling decision appendix, appendix A2".

a. net-to-gross ratio (other than to technically assessed costs);

b. catch-up efficiency (other than to technically assessed costs); and

c. ongoing efficiency (applies to all costs, irrespective of assessment process).

5. Determine GDNs' allowances in net terms (i.e. net of customer contributions).

Notably, Ofgem performs the regression and separate assessment modelling based on gross costs. The "net-to-gross ratio" is then intended to convert the results of the gross totex benchmarking and separate assessment into "net" allowances to be funded through the price control (i.e. net of customer contributions).

The method of calculating the net-to-gross ratio that Ofgem proposes to use in its RIIO-GD3 totex assessment methodology is based on the proportion of GDNs' costs, *as submitted by GDNs at step 1 (i.e. prior to the pre-modelling adjustments at step 2)*, that is to be funded via customer contributions. However, the net-to-gross ratio is applied only at step 4 (i.e. after those pre-modelling adjustments).

As a result, Ofgem's modelling approach contains an obvious, logical inconsistency, and clear computational error, whereby it calculates the net-to-gross ratio based on cost figures before exclusions, disallowances and movements of costs/workload to uncertainty mechanisms, and then applies that ratio to cost figures with exclusions, disallowances and movements of costs/workload to uncertainty mechanisms made. In other words, the way the ratio is calculated does not work given the stage at which the ratio is applied.

B.2 Impact of the net-to-gross ratio issue on GDNs' totex allowances

This error in the calculation and subsequent application of the net-to-gross ratio has a material impact on GDNs' allowances, given that the ratio before accounting for technically assessed exclusions, disallowances and movements of costs/workload to uncertainty mechanisms is materially different from the ratio after accounting for technically assessed exclusions, disallowances and movements of costs/workload to uncertainty mechanisms. The extent of the reduction in allowances that incorrect application of the net-to-gross ratio will be dependent on the difference in the level of contributions between costs excluded from the regression and non-regression assessment for technical assessment, disallowed costs and costs moved to uncertainty mechanisms compared to the level of contributions within costs assessed via regression and non-regression assessment.

For example, with respect to repex diversions:

1. In its RIIO-GD3 Draft Determinations, Ofgem proposes to move our submitted repex diversions costs from baseline totex to a re-opener, which means Ofgem does not consider these costs in its comparative benchmarking or its separate assessment.226

2. Despite Ofgem excluding repex diversions costs from its comparative benchmarking, it calculates the net-to-gross ratio based on GDNs' submitted costs including repex diversions and applies that ratio to modelled costs excluding repex diversions.

3. As a result, the inclusion of repex diversions in the calculation of the net-to-gross ratio unduly drives down Cadent's baseline totex allowances as repex diversions have a significant amount of customer contributions, relative to other areas of costs.

B.3 Required approach to correct the net-to-gross ratio error

To convert gross modelled costs to net modelled costs correctly (ultimately to inform net allowances), Ofgem will need to calculate the net-to-gross ratio based on the ratio of each GDN's costs after deducting gross and net costs associated with all technically assessed exclusions, disallowances and movements to uncertainty mechanisms (including those associated with repex diversions). In other words, the costs associated with activities to which the net-to-gross ratio does not apply should be excluded from the calculation of both the "gross" side and the "net" side of the ratio. Adopting this

[226] Ofgem (1 July 2025), RIIO-GD3 Draft Determinations GD Annex, para. 5.257

approach will result in Cadent's net to gross ratios increasing and Cadent's GD3 allowances increasing by £95m as shown in the table below, Implementation of this remedy does not affect the GDNs' relative efficiency scores.

Table 6: GDNs Allowances: Cadent Error-Corrected DD Model vs. Cadent Error-Corrected DD Model with Corrected Net-to-Gross Ratio (£m, 2023/24)

	Cadent Error-Corrected Model	Cadent Error-Corrected Model with Corrected Net-to-Gross Ratio	
	Allowance	*Allowance*	*Delta to Corrected DD Model*
EoE	2,129.93	2,159.16	29.23
Lon	1,676.67	1,710.30	33.63
NW	1,439.22	1,460.81	21.58
WM	1,135.13	1,145.82	10.69
NGN	1,542.63	1,543.43	0.80
Sc	1,091.82	1,078.77	-13.05
So	2,438.78	2,444.60	5.81
WWU	1,564.09	1,551.55	-12.54
Cadent Total	**6,380.96**	**6,476.09**	**95.13**
Industry Total	**13,018.28**	**13,094.44**	**76.15**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent Analysis

B.4 Regulatory precedent

The error in Ofgem's calculation and application of the net-to-gross ratio is directly analogous to a flaw identified by Northern Powergrid (NPg) in Ofgem's RIIO-ED2 cost benchmarking, which led to its successful CMA appeal:

1. NPg submitted to the CMA that [the Gas and Electricity Markets Authority (GEMA)] "*was wrong to rely on DNOs' submitted cost proportions when allocating DNOs' efficient modelled costs because DNOs' submitted costs were based on decarbonisation planning scenarios that were manifestly different from the one that GEMA intended to fund*".[227]

2. Ofgem's adjustments related to disallowing some of DNOs' load-related expenditure from DNOs' business plans, due to its decision to base ex ante allowances on a common decarbonisation planning scenario. Having disallowed some load-related expenditure, Ofgem did not recalculate the expenditure shares it used to convert the results of its comparative benchmarking into net allowances, just as Ofgem has failed to do in the GD3 Draft Determination.

3. Ultimately, NPg's successful appeal ground pertained to Ofgem relying on the cost mix in companies' business plans, ignoring any adjustments Ofgem made to the companies submitted costs. The CMA concluded that "*we consider that GEMA was wrong to rely on the cost proportions derived from NPG's submitted costs for the purposes of allocating NPG's total efficient modelled costs*".[228] Ofgem is making a very similar error in its proposed approach for RIIO-GD3.

The approach to correcting the net-to-gross ratio that Ofgem needs to adopt here (i.e. calculating the net-to-gross ratio after accounting for technically assessed exclusions disallowances and movements

[227] CMA (2023), "Northern Powergrid Plc v GEMA Final Determination", para 4.4.
[228] CMA (2023), "Northern Powergrid Plc v GEMA Final Determination", para 4.144.

to uncertainty mechanisms) is also consistent with the ultimate outcome of our successful RIIO-GD2 CMA appeal in relation to the treatment of large, atypical LTS rechargeable diversions:

1. Ofgem conceded that it was wrong to include these projects within the econometric benchmarking model at GD2. The CMA upheld this, stating that Ofgem should exclude the list of projects provided by us from comparative benchmarking.[229]

2. We provided a memorandum to Ofgem on the application of the remedy associated with this ground of appeal, which detailed how the net and gross costs associated with the list of projects should be removed from the modelling, to ensure that the net-to-gross ratio applied in the calculation of allowances was correct, and not downwardly biased by including LTS rechargeable diversions in the calculation of the ratio.[230]

3. Ofgem subsequently applied the approach described in our memorandum to calculate our RIIO-GD2 allowances.

B.5 Conclusion on Ofgem's error in the calculation of the net-to-gross ratio issue

In order to comply with its statutory duties, e.g. to ensure GDNs are able to fund the activities that their customers need and to adhere to the regulatory principle of consistency, and to align with pertinent regulatory precedent, Ofgem needs to correct the way in which it calculates the net-to-gross ratio in order to reflect the state in the totex assessment process at which the ratio is applied.

Section C Ofgem would be wrong to remove the forecast time trend from the model specification; this would risk further model misspecification

C.1 Background

In the Draft Determination, Ofgem includes two-time trend explanatory variables in its totex regression model: "t1" covering the entire modelling horizon (2013/14 to 2030/31), and "t2" covering only the period for which only forecast data is available (2024/25 to 2030/31). This is a continuation of Ofgem's approach at RIIO-GD2.[231]

Ofgem's rationale for including time trend variables in the model is to *"capture changes in real expenditure through time, due to increasing efficiency or other exogenous factors not captured within the model."*[232] We understand that Ofgem's reason for including a separate "t2" time trend for forecast years is to capture differences in exogenous factors that affect expenditure over time. Ofgem is seeking input on the use of the "t2" forecast time trend, stating that *"we intend to further consider approaches to using the t2 time trend variable, including the potential to remove this variable from the model specification, before finalizing our decision at Final Determinations"*.[233]

Ofgem also states that *"We consider there is a risk that the t2 variable allows the model to reflect differences between the historic (i.e. actual) data and forecast data, whether or not these increases are appropriately justified. For instance, while the t2 variable would allow the model to capture an increased rate of efficiency improvement within the forecast, it may also allow the model to reflect inefficiencies within the forecast data, which would clearly not be appropriate".*[234]

It would be wrong for Ofgem to remove the "t2" time trend variable for the following reasons:

- without the "t2" variable, the totex regression model would not take account of increases in costs over the forecast period due to exogenous factors;

[229] CMA (2021), "Final Determination Volume 3: Individual Grounds", pg. 35 – 41.
[230] Memorandum "CADENT RECOMMENDED RELIEF IMPLEMENTATION", sent to Ofgem on 7 October 2021
[231] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.192.
[232] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.191.
[233] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.194.
[234] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.193.

- without the “t2” variable, the totex regression model would not be compatible with the application of the ongoing efficiency adjustment; and
- neither the “t1” variable nor the “t2” variable is statistically significant in isolation, but both are jointly significant.

C.2 Need to reflect increases in costs over the forecast period due to exogenous factors

Ofgem’s stated reason for proposing to remove the “t2” time trend variable, i.e. that it might reflect inefficiencies built into GDNs’ forecast costs, is not realistic. Any increase in forecast costs over time will inherently be attributable to exogenous factors (beyond GDNs’ control) anticipated to affect GDNs’ expenditure over the forecast period, not due to an assumption that GDNs will become less efficient over the forecast period.

Since 2014, Ofgem’s consecutive RIIO-GD price controls have continuously incentivised GDNs to become more efficient year-on-year, and to develop efficient forward-looking business plans (including through the ‘catch-up’ efficiency challenge, the ongoing efficiency challenge, and the Business Plan Incentive). An assumption that a positive value of the variable “t2” is capturing increasing inefficiency over time, would imply these efficiency challenges placed on GDNs are not sufficient to incentivise efficiency. Given the strength of the efficiency incentives placed on GDNs, this is implausible. There is no reason that GDNs would submit costs based on an assumption that they will become less efficient over time.

If the “t2” variable has a positive value (as it will in the RIIO-GD3 price control period, based on our error-corrected version of Ofgem’s totex regression model), this can realistically mean only that there are exogenous factors which are anticipated to affect industry expenditure over the forecast period for reasons beyond GDNs’ control, such as the changing requirements on the GDNs (e.g. HSE legislation in relation to fatigue) and increased complexity of workload (e.g. in addressing Tier 1 mains replacement). Therefore, the positive coefficient on the “t2” time trend variable likely reflects increases in overall industry expenditure due to exogenous factors not captured elsewhere within the model, not unproven inefficiencies in the GDNs’ forecast costs. If Ofgem removed the “t2” variable, the model would not capture the effect of these exogenous factors on industry expenditure, which would risk underfunding the industry, as they are not captured in the workload and scale drivers included in the Composite Scale Variable (CSV).

C.3 Need for the “t2” variable to ensure compatibility with the ongoing efficiency adjustment

There is an important structural difference between the actual and forecast data that the separate “t1” and “t2” variables also control for. Ofgem’s regression is calibrated using a mixture of actual, historical data that will include the effect of Ongoing Efficiency (OE) gains. By contrast, forecast data does not factor in such gains as it is based on the costs submitted in GDNs’ business plans that exclude the benefits of OE improvement (because the OE target is applied post-regression). For this reason, it is reasonable to expect a slower decline (or faster increase) in costs during the period covered by the “t2” variable. This is true simply due to the construction of the dataset Ofgem has used in its regression modelling.

Therefore, if Ofgem opted to remove the “t2” variable, the model would not reflect the lack of embedded OE gains in the forecast data, introducing a serious inconsistency into its cost assessment approach. The totex regression needs to produce cost allowance figures that are in a state to which the OE adjustment can then be applied – and it is the “t2” variable that achieves this within the model as it stands. In effect, removing the “t2” variable would lead to Ofgem applying the ongoing efficiency challenge twice for the forecast years, which risks underfunding the industry.

C.4 This is supported by the statistical test results of the error-corrected model

Using our error-corrected version of Ofgem’s totex regression model for RIIO-GD3, the “t1” and “t2” variables are jointly statistically significant at the 1% level (even though neither is individually

statistically significant), as shown in the table below. As a result, if Ofgem removed either the "t1" or the "t2" variable, the model would not accurately explain GDNs' efficient costs.

Table 7: Cadent Error-Corrected Model results

	Cadent Error-Corrected Model
Constant	-0.882***
Totex CSV	0.896***
t1	0.005
t2	0.016*
F-test of t1 & t2 (p-value)	0.000
Adj. R-Squared	0.923
No. of Observations	144

*Note: * Indicates significant at the 10% significance level, ** 5% significance level, *** 1% significance level.*
Source: Cadent analysis.

C.5 Conclusion on Ofgem's proposal to remove the "t2" variable

Removing the "t2" time trend variable risks Ofgem estimating a mis-specified model, which does not capture differences between the actual and the forecast data, either due to exogenous factors outside GDNs' control, or due to the absence of OE gains in the forecast cost data. It is necessary for Ofgem to maintain the "t2" variable order to comply with its statutory duties, e.g. to ensure GDNs are able to fund the activities that their customers need and to adhere to the regulatory principle of consistency. Hence, Ofgem would be wrong to remove the "t2" variable.

Section D Ofgem needs to make an adjustment to GDNs' GD3 allowances at Final Determination to account for policy changes in National Insurance

D.1 Background and options for the adjustment

All GDNs' Business Plan and associated cost forecasts were submitted less than six weeks after the Autumn 2024 Government Budget, and in the run up to submission Ofgem and all GDNs agreed at the Cost Assessment Working Group (CAWG) that there was insufficient time for any GDN to be able to reflect the changes in the Business Plan submissions. However, it was noted that as the changes in the Budget placed further unavoidable costs on GDNs, they would need to be incorporated into the cost assessment approach at a later date in setting the price control by Ofgem.

Following the Draft Determination we have discussed this issue with Ofgem and GDNs at CAWG and, have developed an approach to recognise the aforementioned cost increases for Final Determination. We set this out in further detail below.

There are a number of ways in which the additional National Insurance costs arising from the Autumn 2024 Government Budget can be incorporated within cost allowances at the Final Determination. These fall into three broad types.

The first type would require GDNs to resubmit their entire Business Plan Data Tables (BPDTs). This would be very complex and onerous for GDNs to do, would likely be inaccurate given the complexity, and would also cause unavoidable Government tax changes to affect the efficiency benchmarking, which does not seem appropriate.

The second type of change would involve some type of adjustment mechanism to operate after the price control has been set, for example as an RPE-type indexation method or via a corporation tax adjustment mechanism or re-opener. However, this approach does not seem applicable given that the

tax change has already taken place during the RIIO-GD2 period. In addition, it postpones the issue rather than addressing it upfront.

The third type, a totex uplift, could be applied when setting the price control as part of the cost assessment methodology. A totex uplift avoids a large amount of detailed re-working of Business Plan forecasts and could be applied in one of two ways, either pre-regression or post-regression. If applied pre-regression, it would have the drawbacks of:

- unavoidable Government tax changes affecting the efficiency benchmarking; and
- complexity, in that, within the structure of Ofgem's modelling, adjustments would need to be applied separately to regressed costs, non-regressed costs, Bespoke Output and Technically Assessed costs, and the Regional Factor addback. These changes may also further impact the net-to-gross ratio.

In contrast, a totex uplift applied post regression, at the end of the process, having already applied the net-to-gross ratio, added non-regressed costs, the Regional Factor addback, Bespoke Outputs and Technically Assessed costs, and having applied catch-up and ongoing efficiency adjustments would be far simpler to apply, only needing application once. This is our proposed approach, which we discuss further below.

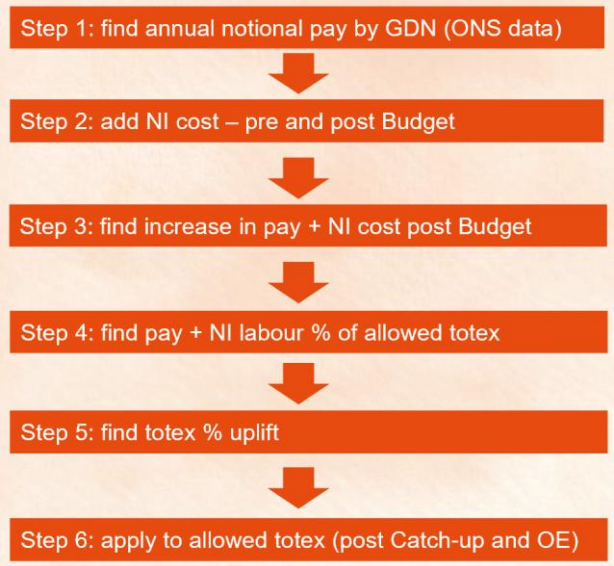
D.2 Our proposed approach: a totex uplift applied post-regression

Our proposed approach builds upon the data and methodology applied by Ofgem in its RLA and is also consistent with the proposed improvement we have put forward in relation to the RLA for recognising additional labour costs faced in particular regions driven by the structure of the Employers National Insurance regime (see our response to GDQ36 for more details on this). To be clear though, while being consistent, the need for each specific adjustment proposed (i.e. in the RLA as discussed in GDQ36 and for additional NI costs discussed here) is independent to one another.

In this case, to estimate the proposed post modelling totex adjustment we use external data from the ONS, rather than GDNs, to estimate the efficient change in costs a notional GDN would incur from changes in the rates and thresholds of Employers National Insurance for the region they operate in, as a result of the Autumn 2024 Government Budget. We then apply this change for each GDN to totex allowances (post application of the net-to-gross ratio, added non-regressed costs, the Regional Factor addback, Bespoke Outputs and Technically Assessed costs, and having applied catch-up and ongoing efficiency adjustments) to generate the required commensurate uplift in totex allowances.

Our proposed approach is summarised in six steps in the following diagram, that are then explained in more detail below:

Figure 1: Steps to apply our proposed post-regression adjustment



In Step 1, we find annual pay for the notional efficient GDN, consistent with Ofgem's RLA. Ofgem's calculations already use hourly pay by region, using standardised weights for different occupations (defined by two-digit SOC codes) comprising the notional GDN labour force. Ofgem then uses ONS population data to convert regional pay into GDN level pay.

We then convert hourly pay at the region level into annual pay, using a standard assumption of 1,934 hours worked per annum. This assumption is derived using UK level ONS ASHE data consistent with Ofgem's RLA calculations. The assumption of 1,934 hours per annum is found by taking annual pay for the SOC codes of the notional GDN, dividing by hourly pay, then applying Ofgem's weightings for the notional GDN labour force.

Then we apply Ofgem's population data to convert annual pay for the notional GDN on a regional basis into a GDN basis, as shown in the table below:

Table 8: Notional Annual Pay Calculations

	Notional GDN			
Region *	**Hourly pay**	**Hours p.a.**	**Pay p.a.**	
	£	**No.**	**£**	
London	21.49	1,934	**41,572**	
South East	19.02	1,934	**36,779**	
Elsewhere	18.14	1,934	**35,086**	
Popn split	**EoE**	**Lo**	**So**	**Others**
	%	%	%	%
London	5%	76%	25%	
South East	0%	10%	68%	
Elsewhere	95%	14%	7%	100%
	100%	**100%**	**100%**	**100%**
Annual pay	**EoE**	**Lo**	**So**	**Others**
	£	£	£	£
London	2,056	31,658	10,251	0
South East	0	3,777	25,115	0
Elsewhere	33,350	4,764	2,475	35,086
	35,406	**40,199**	**37,841**	**35,086**

** Based on Ofgem DD regions - we can provide a version with the East of London area shown separately, consistent with our RLA proposal*

Source: Cadent Analysis

In Step 2, we add on National Insurance costs, both based on the pre-Budget regime and post-Budget regime. To do this we need to apply old and new tax rates and thresholds. Both the old and new thresholds are fixed in nominal terms until April 2028, rising by CPI thereafter, so, for the GD3 period, this means that, in real terms, the thresholds are worth more in 2026/27 than thereafter. The relevant rates and thresholds are summarised below:

Table 9: Employers National Insurance regime changes (Autumn 2024)

Budget changes	Post Budget		Pre Budget	
	2026/27	2027/28 on	2026/27	2027/28 on
Rate	15.00%	15.00%	13.80%	13.80%
Tax free threshold				
- nominal	5,000	5,000	9,100	9,100
- real (23/24 prices)	4,719	4,626	8,588	8,420

Source: Cadent Analysis

We apply these rates and thresholds to calculate, for the notional GDN, the cost of efficient pay plus Employers National Insurance, before and after the Autumn 2024 Government Budget changes, for the year 2026/27, and 2027/28 onwards, in the table below:

Table 10: Changes in notional pay levels per region pre and post Autumn 2024 Government Budget

	2026/27							
	Post Budget				Pre Budget			
	EoE	Lo	So	Others	EoE	Lo	So	Others
	£	£	£	£	£	£	£	£
Salary p.a.	35,406	40,199	37,841	35,086	35,406	40,199	37,841	35,086
NI real threshold	4,719				8,588			
Rate	15.00%				13.80%			
Employers NI	4,603	5,322	4,968	4,555	3,701	4,362	4,037	3,657
Salary + NI	**40,010**	**45,521**	**42,810**	**39,641**	**39,107**	**44,561**	**41,878**	**38,742**
	2027/28 on							
	Post Budget				Pre Budget			
	EoE	Lo	So	Others	EoE	Lo	So	Others
	£	£	£	£	£	£	£	£
Salary p.a.	35,406	40,199	37,841	35,086	35,406	40,199	37,841	35,086
NI real threshold	4,626				8,420			
Rate	15.00%				13.80%			
Employers NI	4,617	5,336	4,982	4,569	3,724	4,386	4,060	3,680
Salary + NI	**40,023**	**45,535**	**42,824**	**39,654**	**39,131**	**44,585**	**41,901**	**38,765**

Source: Cadent Analysis

In Step 3, using the results from Step 2, we calculate the percentage increase in the cost of pay and Employers National Insurance, separately for the year 2026/27, and 2027/28 onwards, as shown below:

Table 11: Increases in notional pay level per GDN due to Employers National Insurance regime changes

	2026/27			2027/28 on		
	Salary + NI cost			Salary + NI cost		
	Post Budget	Pre Budget	Increase	Post Budget	Pre Budget	Increase
	£	£	%	£	£	%
EoE	40,010	39,107	**2.31%**	40,023	39,131	**2.28%**
Lo	45,521	44,561	**2.15%**	45,535	44,585	**2.13%**
NW	39,641	38,742	**2.32%**	39,654	38,765	**2.29%**
WM	39,641	38,742	**2.32%**	39,654	38,765	**2.29%**
NGN	39,641	38,742	**2.32%**	39,654	38,765	**2.29%**
Sc	39,641	38,742	**2.32%**	39,654	38,765	**2.29%**
So	42,810	41,878	**2.22%**	42,824	41,901	**2.20%**
WWU	39,641	38,742	**2.32%**	39,654	38,765	**2.29%**

Source: Cadent Analysis

The increase in cost in 2027/28 is slightly less than that in 2026/27 because inflation reduces the value of the old, larger, threshold by more than the value of the new, lower threshold. We also note that the increase in cost is slightly lower for our Eastern and London GDNs and SGN's Southern GDN, than elsewhere. This is because their notional efficient pay is higher than elsewhere in Ofgem's calculations, so the reduction in the value of the threshold represents a lower proportion of their cost, although their average rate of National Insurance remains above that of the other GDNs, because of the existence of a common threshold.

In Step 4, we calculate the proportion of totex, for the notional, efficient GDN, that is made up of pay and Employers National Insurance. An Ofgem file within the DD modelling suite – GD3_RPEs, "Inp_NotionalStructure" tab, shows the labour proportion of totex, being 69.88%, though this appears to be the figure from the GD2 price control review.[235] However, this includes pension costs. From the most recent statutory accounts of all four companies owning GDNs[236], in particular the wages and salaries note, we calculate that a weighted average of 11.18% of employment costs are associated with pensions.

We remove the pension proportion of the labour proportion of totex (11.18% x 69.88% = 7.81%) to leave 62.07% of allowed totex for the notional, efficient GDN as associated with pay and Employers National Insurance.

In Step 5, we multiply the results of Steps 3 and 4 to calculate the percentage increase in allowed totex for the years 2026/27 and 2027/28 onwards, due to the increase in Employers National Insurance. Referred to in the table below as the 'All Totex uplift'.

[235] This will be required to be updated for Final Determinations

[236] Cadent Gas Limited Annual Report and Accounts 2024/25, note 7 page 131: SGN Annual Report and Financial Statements 2025 notes 6,7 page 117: Northern Gas Networks Limited Annual Report and accounts for the year ended 31 March 2024 note 5 page 58 (uplifted to 24/25 prices): Wales & West Utilities Limited Annual Report and Consolidated Financial Statements for the year ended 31 March 2024 note 4 page 71 (uplifted to 24/25 prices)

Table 12: Increases in efficient totex per GDN due to Employers National Insurance regime changes

	2026/27			2027/28 on		
	Pay + NI			Pay + NI		
	Cost uplift	Totex proportion	All Totex uplift	Cost uplift	Totex proportion	All Totex uplift
	%	%	%	%	%	%
EoE	2.31%	62.07%	**1.43%**	2.28%	62.07%	**1.42%**
Lo	2.15%	62.07%	**1.34%**	2.13%	62.07%	**1.32%**
NW	2.32%	62.07%	**1.44%**	2.29%	62.07%	**1.42%**
WM	2.32%	62.07%	**1.44%**	2.29%	62.07%	**1.42%**
NGN	2.32%	62.07%	**1.44%**	2.29%	62.07%	**1.42%**
Sc	2.32%	62.07%	**1.44%**	2.29%	62.07%	**1.42%**
So	2.22%	62.07%	**1.38%**	2.20%	62.07%	**1.37%**
WWU	2.32%	62.07%	**1.44%**	2.29%	62.07%	**1.42%**

Source: Cadent Analysis

In Step 6, we apply the result of Step 5 to totex allowances as set out in our Error Corrected model[237] , in order to calculate the increase in totex due to the increase in Employers National Insurance.

Table 13: Increases in Allowances relative to the Cadent Error-Corrected model, when applying our proposed post regression totex uplift

	2026/27			2027/28 on			GD3
	Pay + NI			Pay + NI			Pay & NI
	All Totex uplift	Allowed Totex	All Totex uplift	All Totex uplift	Allowed Totex	All Totex uplift	All Totex uplift
	%	£m	£m	%	£m	%	£m
EoE	1.43%	454	**6**	1.42%	1,676	**24**	**30**
Lo	1.34%	336	**4**	1.32%	1,340	**18**	**22**
NW	1.44%	297	**4**	1.42%	1,142	**16**	**21**
WM	1.44%	241	**3**	1.42%	894	**13**	**16**
NGN	1.44%	305	**4**	1.42%	1,237	**18**	**22**
Sc	1.44%	221	**3**	1.42%	871	**12**	**16**
So	1.38%	521	**7**	1.37%	1,918	**26**	**33**
WWU	1.44%	320	**5**	1.42%	1,244	**18**	**22**
		2,694	**38**		**10,324**	**144**	**182**

Source: Cadent Analysis

[237] GD3_Allowances_File_GD_noRPEs xls: tab Out_Allow: cells AL72–AP89

We have then assessed the reasonableness of the answers from this approach by comparing the results against the estimates provided by seven of the eight GDNs of the additional cost driven by the change in the Employers National insurance regime submitted in BPDTs table M8.14: Bespoke, Uncertain and Separate Activities[238]:

Table 14: Comparison of the results of our proposed totex uplift to GDN BPDT submissions of BPDT M8.14[239]

BUS table comparison GD3			
Budget NI	**M8.14**	**Calc'd**	**Reduction**
	£m	**£m**	**£m**
EoE	31	30	1
Lo	26	22	4
NW	22	21	2
WM	16	16	0
NGN	14	22	-8
Sc *	18	16	2
So	45	33	11
Total	**173**	**160**	**12**

Source: Cadent Analysis

For five of the seven GDNs that submitted costs in BPDT M8.14 (WWU did not submit a forecast estimate of the impact on costs), the totex uplift post regression produces a similar, but lower figure (West Midlands being virtually identical), which would be expected given that Draft Determination contains significant workload disallowances and further efficiency stretches applied.

For completeness, we have reperformed the above calculations to include our proposal to include the East of London area within the RLA, but this makes almost no difference to the required "totex uplift" found in Step 5, or to the increase in allowed totex found in Step 6, as shown below:

Table 15: Increases in Allowances relative to the Cadent Error-Corrected model, when applying our proposed post regression totex uplift (and our RLA proposal for the East of London area)

East of London	2026/27 Pay + NI			2027/28 on Pay + NI			GD3 Pay & NI
	All Totex uplift %	Allowed Totex £m	All Totex uplift £m	All Totex uplift %	Allowed Totex £m	All Totex uplift %	All Totex uplift £m
EoE	1.43%	454	**6**	1.41%	1,676	**24**	**30**
Lo	1.33%	336	**4**	1.32%	1,340	**18**	**22**
NW	1.44%	297	**4**	1.43%	1,142	**16**	**21**
WM	1.44%	241	**3**	1.43%	894	**13**	**16**
NGN	1.44%	305	**4**	1.43%	1,237	**18**	**22**
Sc	1.44%	221	**3**	1.43%	871	**12**	**16**
So	1.38%	521	**7**	1.37%	1,918	**26**	**33**
WWU	1.44%	320	**5**	1.43%	1,244	**18**	**22**
		2,694	**38**		**10,324**	**144**	**183**

Source: Cadent Analysis

[238] The figure for SGN's Scotland network was restated at a recent Cost Assessment Working Group (CAWG) – CAWG22, held on August 12th 2025

[239] The data set out in this table has also been provided to Ofgem as part of Cadent-DDQ67 we have submitted to Ofgem

D.3 Conclusion on our proposal to account for policy changes in National Insurance at Final Determination

The additional, unavoidable costs of Employers National Insurance driven by policy changes in the Autumn 2024 Government Budget need to be included within cost allowances at Final Determination. Failing to do so, would result in a material error by Ofgem, resulting in the underfunding of GDNs over the RIIO-GD3 price control. To support Ofgem in doing so we have developed a robust and implementable solution to doing so consistent with its wider approach to regional labour adjustments.

The totex uplift post regression approach we describe above to including these costs has many advantages:

- it does not affect Ofgem's benchmarking, which is logical, since unavoidable Government tax changes should not affect Ofgem's assessment of efficiency;
- it is consistent with Ofgem's approach to efficient, notional labour costs in the RLA;
- it is based on Government tax rates and thresholds, and ONS ASHE data, rather than GDN's own cost estimates;
- it is easy to implement:
    - Ofgem needs no additional data;
    - it is completely flexible, once the percentage totex uplift is found in Step 5, it needs no adjustment for changing allowed totex assumptions;
    - it flows naturally into the totex disaggregation calculation;
- its results are broadly comparable – typically somewhat below - those in BUS table M8.14; and
- it is future proof, being usable in any re-opener in RIIO-GD3 or via a close-out mechanism, should rates and thresholds for Employers National Insurance change in a material way, up or down, in future Budgets within the period.

We note that some of the data included above, for example the totex labour percentage in Step 4, and the SOC code weightings in Step 1, are likely to be updated in Ofgem's Final Determination. These updates should also be reflected in the calculation of this adjustment.

Section E Conclusion on our response to GDQ37

We agree in principle with the approach of top-down or totex benchmarking. However, Ofgem has taken specific methodological decisions which risk underfunding GDNs efficient costs in error and hence failing to achieve its statutory objectives:

1. Ofgem failed to explain the basis for its Draft Determination position that a density model is not a clearly superior and reliable tool to set (or, without prejudice to that position, at a minimum cross-validate) the allowances it sets for networks at RIIO-GD3. It asserts econometric problems, without providing evidence to demonstrate the problems arise or their impact, and in some cases, it applies or interprets econometric tests incorrectly. Ofgem's errors in this regard, alongside its rejection of our proposed pre-modelling adjustments, will result in it significantly underfunding the cost of our London operations, if it does not change its approach at Final Determination. Given this misspecification in Ofgem's model, we propose that Ofgem uses our proposed density model.
2. Ofgem's Draft Determination approach to setting net cost allowances contains a material computational error whereby the net-to-gross ratio is mis specified, erroneously impacting the allowances of all GDNs. Ofgem's should amend the net-to-gross ratio to take account of the proportion of costs that are Technically Assessed and those that are disallowed or moved into uncertainty mechanisms prior to comparative benchmarking. If requested by Ofgem, we would be happy to share the modelling files which implement the correct net-to-gross ratio.
3. Ofgem must not remove the "t2" forecast time trend from the regression, as it has a statistically significant effect on modelled costs (since the "t1" and "t2" variables are jointly significant).

4. Ofgem must reflect the change in National Insurance policy in GDNs' Final Determination allowances. We propose that to do this, Ofgem applies our proposal of a totex uplift post-regression approach, as detailed above.

GDQ38. Do you agree with the proposed level of aggregation, estimation technique and time period for our econometric modelling?

Regarding Ofgem's proposed level of aggregation (top-down model), see our response to GDQ32.

Ofgem has proposed to use the Ordinary Least Squares (OLS) estimation technique to estimate the top-down regression model. We agree with Ofgem's use of OLS estimation, because it has the advantage over alternative estimation techniques (such as Random Effects (RE)) of being less demanding regarding sample size. Specifically, for OLS models, the minimum required sample size is dictated by the total number of observations (144, in the case of the GD3 model), relative to the number of coefficients that need to be estimated with the model (4). Conversely, RE models require both a large number of time periods and cross-sectional entities. In the context of RIIO-GD3 benchmarking, there are only eight cross-sectional entities, which may lead to unreliable RE estimates. Further, we consider OLS estimation to be the "simplest" form of econometric estimation, allowing for simple interpretation of the estimated coefficients.

Ofgem has proposed to use cost and driver data from 2014-2031 to estimate the regression. We agree with the use of RIIO-GD1, GD2, and GD3 data within the regression. We agree with Ofgem's statement that "*benchmark models are considered more statistically robust the greater the number of observations included within the model*".[240] We think this is an important point to bear in mind in the context of other points of consideration for Final Determinations, most notably Ofgem's potential consideration of setting the catch-up efficiency challenge only based on historic data (as detailed in our response to GDQ43).

[240] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.197

GDQ39. Do you agree with our proposed cost drivers and approach to weighting drivers in the totex CSV?

Our response to GDQ39 is structured as follows:

- In **Section A** we explain why we broadly agree with Ofgem's choice of cost drivers within the CSV;
- In **Section B** we explain why we consider that workload complexity cannot be consistently capture in the repex synthetic workload driver;
- In **Section C** we explain that Ofgem should remedy a clear computational error in its draft Determination model by updating the calculation of the repex synthetic cost driver to include a volume and synthetic unit cost for Robotic Intervention workload (also discussed in our response to GDQ36); and
- In **Section D** we explain that based on the latest available data our proposed remedies to Ofgem's approach to weighting the CSV do not materially improve the statistical performance of Ofgem's regression model. As a result, we suggest that Ofgem retains its proposed CSV weighting approach in the Final Determination, and focus making improvements to its modelling on more serious problems with the Draft Determinations approach before the Final Determination.

Whilst not discussed in detail in this response, with regard to the calculation of GDNs' cost drivers, we note that in its Draft Determination, Ofgem commented that it would further engage with the GDNs on the construction of the repex synthetic cost driver, and specifically GDNs' forecast lay-to-abandon ratios. We have provided further information on our networks RIIO-3 forecast lay-to-abandon ratios via supplementary questions and propose that Ofgem do not make any adjustments to our forecast workloads.

Section A We broadly agree with Ofgem's choice of cost drivers within the CSV

Ofgem has proposed to use seven cost drivers within the totex CSV, each weighted by the industry average expenditure share of the cost which the driver is intended to explain. The seven cost drivers and weighting approach proposed by Ofgem are the same as those used at RIIO-GD2. We broadly agree with the proposed cost drivers and have been unable to identify any better cost drivers (subject to Ofgem remedying the clear computational error in the repex synthetic cost driver noted below in Section C).

We do not agree with the other GDNs' proposals to use alternative cost drivers, such as using "total repairs" instead of "total external condition reports" as a driver for repairs costs, as proposed by SGN[241]. SGN claims that "*repairs represent a more operationally intuitive measure of the costs GDNs face, given that a single external condition report can result in more than one repair*".[242] Ofgem rejected this proposal on the basis that "*it does not meet the criteria of a robust cost driver*" and "*replacing or introducing repairs as a secondary driver could risk introducing the wrong incentives to GDNs, which have more control over the number, scope and timing of repair work*".[243] We agree with Ofgem's assessment that including "total repairs" as a driver of repairs costs in the model would risk creating incentives for GDNs to increase the number of repairs undertaken per total external condition report.

Section B Complexity cannot be accurately and consistently captured within the repex synthetic cost drivers

Ofgem has proposed not to account for repex workload complexity within the calculation of the repex synthetic cost driver, despite some GDNs proposing this within their business plans. Ofgem's position is based on the finding that consistent data is not available across all eight GDNs on the degree of

[241] SGN (2024), "RIIO-GD3 Business Plan – Cost Assessment and Benchmarking Annex", pg.65
[242] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.208
[243] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.208

complexity by type of work. Ofgem states that "*we are not currently proposing at Draft Determinations to separate out the areas of complexity identified by the GDNs within the repex component of the CSV cost driver. This reflects the fact that in many cases we have insufficient historic and forecast information on the increased volumes and costs, and the complexity has not been considered consistently across all GDNs submissions*".[244] We agree with this proposal, since the incorporation of incomparable data across the GDNs into the calculation of the repex cost driver (the repex synthetic) would reduce the robustness of Ofgem's modelling and risk conflating complexity with differences in GDNs' efficiency.

Ofgem has stated that it is open to considering incorporating complexity into the driver before the Final Determination if the GDNs provide "*sufficient evidence and an appropriate methodological approach*".[245] Ofgem provides a list of the evidence that it would require, including "*well evidenced information on volume of complex workloads, on a comparable basis across GDNs*",[246] and evidence that complexity materially impacts GDNs' efficient costs. Whilst we do consider that complexity materially impacts GDNs' efficient costs, comparable data on the volume of complex workloads is not available, as the GDNs do not consistently report this information on a comparable basis.

All GDNs raised points in their business plans around increasing complexity, so it is clear that all GDNs are experiencing increases in complexity for the GD3 period which will increase their efficient costs. If this is the case, these increases will be captured and remunerated through (i) the unit costs which inform the repex synthetic cost driver rising to reflect rising complexity, (ii) the coefficient on the totex CSV, which contains the repex synthetic, and (iii) Ofgem's practice of setting allowances based on an upper quartile / 85th percentile, forward-looking cost target for the industry (i.e. based on RIIO-GD3 efficiency scores).

Therefore, the most robust approach is to allow the model and cost assessment approach used to capture the impact of increasing complexity on efficient costs, as opposed to including complexity within the repex workload driver, given that the GDNs do not have consistent data on the impact of the increasing complexity. We note that should Ofgem amend any of the three elements of the model made above, which allow the approach to capture complexity itself; in relation to repex synthetic unit costs; the approach through which the repex synthetic is captured in the CSV; or setting the benchmark on forecast costs, this topic may need to be revisited.

Section C Ofgem should remedy a clear computational error in its repex synthetic cost driver to include robotic intervention costs and volumes

As discussed in response to GDQ36, Ofgem should include volumes and unit costs associated within Robotic Intervention repex workload in the calculation of its repex synthetic cost driver. If Ofgem do not make this correction, the repex synthetic cost driver, and hence Ofgem's benchmarking model, will not be able to capture the efficient costs of undertaking this activity, in error. This will discriminate unduly against us, as only our GDNs forecast spend on this activity in RIIO-GD3. We discuss this issue further in our response to GDQ36.

Section D Despite our view that it remedies conceptual errors in Ofgem's approach, our proposed CSV weighting approach does not materially improve Ofgem's regression model, based on current data

In its RIIO-GD3 Draft Determinations, Ofgem proposes to weight the components within the totex CSV based on industry average expenditure shares for the activities associated with each cost driver. This is a continuation of Ofgem's approach from RIIO-GD1 and RIIO-GD2.[247]

In our Business Plan, we set out an improved methodology for weighing the components of the totex CSV. Specifically, we proposed that the weights be based on company-specific and annual

[244] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.219
[245] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.219
[246] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.219
[247] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.231.

expenditure shares and incorporate individual cost elasticities (estimated via bottom-up regressions). We also proposed that the units of the cost drivers included in the CSV be standardised, given that each driver is measured in different units. Below, we briefly discuss how each of our proposals – when implemented together - addresses a conceptual bias or inaccuracy in Ofgem's proposed approach.[248]

- **Company-specific expenditure shares**: CSV weights based on industry average expenditure shares do not reflect differences in expenditure composition between GDNs and hence lead to GDNs with an expenditure composition further from the average being disadvantaged in the benchmarking. Therefore, Ofgem's proposed approach does not allow GDNs to efficiently trade-off opex and capex spend (as the top-down totex model is intended to) without suffering disallowances.

- **Annual expenditure shares**: GDNs' efficient expenditure compositions will change over time to reflect industry trends. Therefore, using average expenditure shares over RIIO-GD1-RIIO-GD3 to weight the CSV means that, in years for which GDNs' expenditure composition is different from the modelling period average, even for efficient reasons, the CSV will not accurately explain GDNs' efficient costs.

- **Incorporation of bottom-up elasticities into weights calculation:** As demonstrated by the range of coefficients estimated via the bottom-up regressions, the elasticities of each cost area to its driver vary.[249] However, Ofgem's proposed approach assumes a single common elasticity (as represented by the regression coefficient) of costs to changes in the relevant driver, which means Ofgem's proposed CSV will not accurately explain GDNs' efficient costs.

- **Standardisation of driver units:** The individual cost drivers within the CSV are measured in different units, and hence have different unit values.[250] As a result, a GDN with a higher spend proportion in areas that have cost drivers with larger unit values (e.g., Emergency) will have a higher CSV than a GDN with identical driver values, but a lower spend proportion in these areas. A higher CSV leads to higher modelled costs, which leads to the model being biased in favour of the former GDN.

Notwithstanding the conceptual biases that our proposal remedies in Ofgem's approach, having reassessed our approach in light of submitted data for the RIIO-3 period (not available at the time of compiling our own Business Plan), we accept that, at this time, our proposals do not materially improve Ofgem's model. Therefore, in the case of setting the RIIO-3 price control, we suggest that Ofgem retains its proposed CSV weighting approach in the Final Determination, and focus making improvements to its modelling on more serious problems with the Draft Determinations approach before the Final Determination. Notably, as outlined in response to GDQ37 and GDQ36, we suggest Ofgem focuses on improving its cost assessment framework's ability to capture the high costs we face due to the unique operating environment in London.

[248] For more details on our CSV methodology proposals, refer to Section 5.1 of Appendix 3 of our Business Plan – Cost Assessment and Benchmarking Approach.
[249] For instance, based on our error-corrected version of Ofgem's model, the elasticity of Emergency costs with respect to the Emergency CSV is 1.03, whereas the elasticity of Other costs with respect to MEAV is 0.77.
[250] For example, the Emergency CSV is a function of customer numbers and external condition reports, and generally has values in the tens of thousands. In contrast, the Connections Synthetic Cost generally has values in the tens.

GDQ40. What are your views on our proposed workload adjustments to cost drivers?

We broadly agree with principles behind Ofgem's proposed RIIO-GD3 approach of adjusting workload drivers to reflect cost exclusions and disallowances prior to its regression analysis. However, we have significant concerns regarding the accuracy, consistency, and transparency of Ofgem's workload adjustments.

While we understand the intention behind Ofgem's workload adjustments, we have encountered significant challenges in understanding and verifying the detailed rationale and calculations behind Ofgem's adjustments, particularly relating to workload disallowances. We have therefore submitted a DDQ (Cadent DDQ044) regarding Capex and Repex volume disallowances to Ofgem to explain these calculations. DDQ44 sought further clarity from Ofgem on their methodology, adjustments and calculations within the cost modelling suite to allow for effective reconciliation and verification by us and other networks. However, at point of submission of this response to the Draft Determinations to Ofgem, we are yet to receive sufficient information from Ofgem to verify the rationale and accuracy of its disallowances for workload and their application in the cost modelling suite. This is despite us raising this DDQ on 4th August 2025.

Notwithstanding this, from what we have been able to discern there are significant errors in Ofgem workload adjustments applied in the Draft Determinations modelling. Specifically, our review to date has uncovered critical issues, which we have raised with Ofgem via it's GitLab issue log, such as:

- **Reinforcement Synthetic Costs** (GitLab issues ref. 100-101): When calculating reinforcement synthetic costs across all Cadent networks, workload data should be consistently sourced from submitted BPDT data. For RIIO-GD2 years, Ofgem has not correctly extract the relevant reinforcement synthetic workload data from our BPDTs. Instead, Ofgem incorrectly relied on alternative data sources that did not align with the correct values reflected in BPDTs.

- **Repex Synthetic Costs, for mains** (GitLab issues ref. 102-103): Workload for the London Medium Pressure (LMP) and Grays Medium Pressure (Grays MP) projects were incorrectly retained within the repex mains workload for the London network in RIIO-2 and RIIO-3 years. Volumes associated with these atypical projects should have been excluded from workload drivers, since we excluded the associated costs from regressed costs.

- **Repex Synthetic Costs, for services** (GitLab issues ref. 128-129): Workload for the Grays Medium Pressure (Grays MP) projects were incorrectly retained within the repex services workload for the London network in RIIO-3 years. Volumes associated with these atypical projects should have been excluded from workload drivers, since we excluded costs from regressed costs.

We also identified similar instances for other non-Cadent networks where Ofgem did not remove workload for repex projects that it is separately assessing. We raised these to Ofgem via GitLab. Whilst some of the issues raised have been remedied by Ofgem in its Issue Corrected Model run (circulated on the 13th August 2025), this did not take account of all identified errors, and when remediating some issues – notably the removal of volumes from repex synthetic costs for London and Grays Medium pressure projects – this seems to have introduced further errors in the cost modelling suite. In this instance leaving negative volume values feeding into the repex synthetic cost driver for our London network, which has the impact of materially understating its efficiency in Ofgem's Issue Corrected Model run.

Given the complexity and scale of these workload adjustments across both repex and capex, it is imperative that adjustments are based on robust, verifiable data with clearly articulated, consistently applied assumptions. We strongly recommend Ofgem undertakes a thorough reassessment of its workload adjustments and addresses all errors we raised via GitLab correctly. Furthermore, we will engage with Ofgem further to better understand the underlying calculations for its workload disallowances so these can be verified and to ensure they do not introduce further errors into the cost modelling suite.

GDQ41. Do you agree with our approach to non-regression benchmarking analysis?

Generally, we agree with Ofgem's approach to use non-regression benchmarking analysis to assess certain cost areas, which it would be inappropriate to assess within the regression. However, there are certain areas in which Ofgem could improve its non-regression benchmarking analysis. We also have identified instances where Ofgem has erred, particularly in its assessment of costs associated with Multiple Occupancy Buildings (MOBs) and Streetworks. We discuss these two cost areas in turn below.

Further, we note that at RIIO-GD2, for all GDNs, Ofgem assessed the efficient level of cost for repex Diversions, both rechargeable and non-rechargeable, as non-regressed costs. For RIIO-GD3, Ofgem has proposed to move all our costs associated with this activity to an Uncertainty Mechanism, with similar treatment proposed for most costs associated with mains reinforcement. Given that our repex diversions costs have been moved to an Uncertainty Mechanism for RIIO-GD3, we do not provide any comment on Ofgem's approach to separately assess these costs in our Draft Determination response.

Ofgem has incorrectly assessed MOBs Risers costs relating to EJP10 and EJP11, and its setting of MOBs repex unit costs

Regarding MOBs costs, Ofgem accepted our proposals for opex costs and also repex "Replacement on Failure" in the Draft Determination. However, following Ofgem's engineering review of EJP10 and EJP11, Ofgem disallowed two elements of Cadent's proposed planned replacement workload:

- PE Riser mains on high rise buildings for £3.6m[251]
- Other Proactive riser replacement for £101.5m[252]

Ofgem also noted that it would continue to work with Cadent ahead of its Final Determinations to understand efficient levels of funding for replacement of PE risers in RIIO-GD3[253], and also that the "needs case" for EJP 10, MOBs Risers, was only partially justified, with additional data required.[254] We will continue to work with Ofgem to discuss the rationale and justification for our proposed workloads. In our response to CADQ14 we set out further information to justify our proposed volumes.

In addition, we propose Ofgem makes two changes to the assessment of Cadent's MOBs costs for Final Determination.

Firstly, we propose that Ofgem apply an uplift to Cadent's allowance for MOBs Riser repex to bring them up to the industry average, which they are significantly below in BPDTs in recognition of the fact that our unit costs, as at RIIO-GD2, are significantly lower than the industry average. At RIIO-GD2, Ofgem used Cadent's unit costs to reduce the allowance for another GDN, NGN[255], because our unit costs were considered the most reliable.

At RIIO-GD3, across the different types of MOBs Riser repex, and different height levels, there are 45 activities where we and the other GDNs both propose workload in the GD3 period. Of these, our networks almost always have lower unit costs than the industry average – there are only two instances where one of our GDNs has a unit cost above the industry average, neither being in activities with substantial workloads, all of which is shown in the table below:

[251] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.247
[252] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.253
[253] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.254
[254] Ofgem (2025), "RIIO-3 Draft Determinations Cadent Annex", page 64
[255] Ofgem (2020), "RIIO-2 Draft Determinations Northern Gas Networks Annex", para 3.32

Table 1: Comparison of GD3 MOBs Repex Unit Costs across networks

[redacted]

Source: Cadent Analysis

In the Draft Determination modelling, Ofgem applies a catch-up efficiency challenge to non-regressed costs areas, which is calculated based on GDNs' relative efficiency within regressed cost areas. In our response to GDQ42, we explain why this is wrong. Notwithstanding this, however, should Ofgem retain its Draft Determination approach for Final Determination for the assessment of MOBs, it is imperative that Ofgem uplift Cadent's MOBs repex unit costs in line with the industry average unit costs. If Ofgem does not adopt this approach, it is effectively applying two duplicative efficiency challenges (one in the setting of the unit costs, and a second in the application of the catch-up efficiency challenge).

Secondly, a review of our Business Plan submission data for maintenance (BPDT able c4.02) has identified that the MOBs Routine Maintenance costs, in our North London network only, have been understated due to an allocation issue in the supporting file used to populate this table. We are therefore, submitting revised data to be included for cost assessment at Final Determination. This data is set out below and in the Cadent-DDQ067 we raised with Ofgem. Correcting for this issue does not change the costs in the North London maintenance table overall, however, it does result in a more accurate view of our forecast resource requirements and costs to routinely maintain MOBs and Distribution Mains. MOBs opex values are also included in our Bespoke, Uncertain and Separate Activities table (BPDT M8.14), requiring Ofgem to also update these values in its modelling.

The necessary adjustment decreases costs in Routine Distribution Mains by £1.68m per annum in the RIIO-GD3 period and increases Routine MOBs costs by £1.68m per annum. The new table below

details the new values, the original values as per the Business Plan submission, and the variance to enable this change to be made.

Table 2: North London Maintenance data changes (Table c4.02):

[redacted]

Source: Cadent Analysis

In the cost assessment process, this change will lead to a reduction in North London's costs included the totex regression, and an increase in the amount subject to non-regression benchmarking analysis.

Ofgem is wrong in its assessment of Streetworks costs, underfunding GDNs efficient expenditure

Regarding Streetworks costs, Ofgem's Draft Determination approach aims to reflect the varying exposure of different GDNs to permitting regimes, by setting allowances based on a ten-year average of each GDN's costs, from 2021/22 to 2030/31, except for charges and penalties, which are disallowed.[256] This is the same approach that Ofgem applied at RIIO-GD2, moved forwards by five years.

Before addressing our detailed points on Ofgem's approach, it is important to understand the context of Streetworks costs. Streetworks costs have been rising steeply over time. BPDTs show that industry costs have risen from £36m in 2013/14 to £113m in 2023/24, with the increase being not only due to the impact of new permit schemes, but also because existing Streetworks requirements have become more onerous and the resulting costs higher.

It is very difficult to forecast accurately how costs will rise several years in advance, for example, for increased costs for parking bay suspensions, or the need for manned traffic lights to secure a permit. As a result, the projections contained in RIIO-GD2 Business Plans have proved to be significantly too low. For Cadent, our GD2 projections of Streetworks costs have been 37% below the actual level for the first three years of GD2, with the smallest under-estimate, 22%, being for our London network, which was fully permitted at the time Business Plans were submitted – so *none* of the shortfall is due to the unexpected implementation of new permit schemes.

Given that Ofgem's RIIO-GD2 approach led to inadequate allowances, largely in respect of existing permit schemes, it is unsurprising that, four GDNs submitted significant re-opener claims for additional funding, worth in their totality £72m. However, owing to the way Ofgem constructed and interpreted the criteria for applying for additional funding in the re-opener, of which, in the RIIO-GD2 Draft Determination for the re-opener, Ofgem rejected £56m as it related to additional costs incurred for permit schemes already in place at 1 April 2021, regardless of the fact that this meant such costs went

[256] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", paras 5.260, 5.262

unfunded due to the approach to set ex-ante allowances.[257]

Therefore, the context is of steeply rising costs that are difficult to anticipate accurately as they are externally driven, coupled with a ten-year averaging approach to setting allowances, minus charges and penalties, that lags behind recent increases, plus a re-opener that, at RIIO-GD2, only covers new permit schemes. This combination has led to a significant underfunding of Streetworks costs in RIIO-GD2 that if continued into RIIO-GD3 would risk systematically underfunding the industry for efficiently incurred Streetworks expenditure, representing a clear error in Ofgem's approach.

To remedy this error, we believe changes to both Ofgem's approach to setting allowances and the specification of the relevant re-opener mechanism are needed. Our proposals for the Streetworks re-opener for RIIO-GD3 are set out in GDQ27, namely the broadening of the scope of the GD2 re-opener to explicitly cover material uncontrollable changes in costs relating to the application of existing schemes.

Regarding the calculation of ex-ante allowances for RIIO-GD3, we believe Ofgem should make three changes to its assessment approach set out at Draft Determination.

1. First, to reflect the rising path of costs, Ofgem should drop the first two years of the ten-year average, in which costs tended to be lower for a variety of reasons.
2. Second, where material, the ten-year average, or whatever length, should be adjusted to reflect Highway Authorities that only began permitting part-way through the relevant period used for averaging.
3. Third, we do not agree with the disallowance of charges and penalties and believe these should be included in the Streetworks cost assessment.

We discuss these points in turn below.

In addition, as with other calculations forming this part of this DD, we have found a number of computational errors, for which we have already provided details to Ofgem, but for completeness, we detail in Annex GDQ32 – 1 to this response.

Ofgem should reduce the period of the average from 10 years to 8, given the upward trend in costs

As explained above, Streetworks costs are rising over time, difficult to predict, and, largely out of GDNs' control (for example, when new permitting schemes are established, and when permitting regimes and relevant associated fee levels set by Highway Authorities are changed).

To better take account of the rising path of Streetworks costs over time, we believe that the ten-year period should be reduced to the most recent eight years, i.e. 2023/24 to 2030/31 inclusive, so that the earlier years, when costs were typically lower, are not included in the calculation.

An average of eight years also has the benefits of:

- not entirely consisting of forecasts: we understand that Ofgem may not be comfortable with setting allowances in this area using entirely forecast data; and
- making it significantly more likely that the number of Highway Authorities included in the calculation of allowed costs is the same as that for the RIIO-GD3 period – we have three Highway Authorities that implemented permit schemes during the first two years of the ten-year average, and none thereafter. Consequently, a ten average period will provide an insufficient allowance for costs associated with these Highway Authorities, whereas an eight

[257] Ofgem (2025), "RIIO-2 Re-opener - GD Sector annex", pg 11-15

year average may reflect the Highway Authority permit schemes present during the RIIO-GD3 period.

Updating the Draft Determination approach to account for the 8-year averaging period would better reflect the upward path of costs and as a result increase Cadent's allowance for Streetworks costs by £15m.

Costs within the averaging period, regardless of the of whatever length used, should be adjusted to reflect Highway Authorities that only began permitting part-way through the relevant period

GDNs' Streetworks allowances for the RIIO-GD3 period must reflect the permitting schemes in place during that period, which, as noted above, may well be different to the permitting schemes in place in previous periods. In respect of when new permitting schemes are established clearly allowances set must reflect those in place for the RIIO-GD3 period. Therefore, regardless of the length of the averaging period used, where material, we believe that Ofgem should adjust GDNs' historically incurred costs to reflect those Highway Authority permitting schemes that began operation part-way through the averaging period. Otherwise, the average allowance set will erroneously capture lower cost years where relevant schemes were not operating and efficient costs to be incurred in the RIIO-GD3 period will be underestimated. Although, as noted above, this is less likely to occur if an eight-year averaging period is adopted. We discuss below how Ofgem could make this adjustment within its model.

For example, situated within the West Midlands GDN, Birmingham – the largest Local Authority in Europe – implemented its permit scheme on 1 March 2023 – at the end of the second year of Ofgem's ten-year average period used at Draft Determination. Similarly, Stoke-on-Trent – also a large Local Authority implemented its permit scheme on 31 August 2021.

Both Local Authorities noted above used the "Streetmanager" system even before they began charging for permits when the schemes became active. As a result, we know how many chargeable permits they would have generated for 2021/22 and 2022/23 had the schemes been operational – which represent an additional 28.4% of the West Midlands total number of permits in 2021/22 and 19.4% for 2022/23.

By uplifting the reported streetworks costs associated with permit schemes in 2021/22 and 2022/23, the table below calculates the additional cost to be included in a ten-year average calculation, separating out charges and penalties.

Table 3: Calculation of uplift required to take account of permit schemes introduced part-way through the relevant period

West Midlands permit related costs ex BPDT		2021/22	2022/23	Row	Maths
Total net costs of permits granted	£m	0.69	0.69	A	
Total net costs of chargeable variations	£m	0.69	0.45	B	
Back Office, admin & training costs	£m	0.40	0.39	C	
Costs incurred due to loss of productivity	£m	2.73	3.06	D	
Total permit related cost before charges & penalties	**£m**	**4.51**	**4.59**	E	= sum A to D
Total Cost of Fixed Penalty Notices	£m	0.30	0.19	F	
Total permit related cost after charges & penalties	**£m**	**4.81**	**4.78**	G	= E + F
Uplift for late permit schemes	%	28.43%	19.37%	H	
Uplift for permit costs before charges & penalties	£m	1.28	0.89	I	= E x H
Uplift for charges & penalties	£m	0.09	0.04	J	= F x H
Total uplift	**£m**	**1.37**	**0.93**	K	= I + J

Source: Cadent Analysis

The table shows that West Midlands Streetworks costs for 2021/22 should be adjusted upwards by £1.37m and for 2022/23 by £0.93m, to reflect the start of permit schemes for Birmingham and Stoke part way through the ten-year period. Under Ofgem's DD approach with a ten-year average, this would increase West Midlands' allowance in GD3 by £1.15m including charges & penalties, and £1.08m excluding them. Under our proposed eight-year average, there would be no change required given the adjustments are only for the first two years of the period.

In addition to West Midlands, Eastern GDN also has one Highway Authority - North East Lincolnshire - that implemented a permit scheme during the ten-year period. However, the scheme was introduced only three months into this period, and, in the context of our Eastern GDN, it generates a relatively low volume of permits. As a result, we would not seek to adjust the Draft Determination calculations for it due to proportionality.

Ofgem could replicate the calculation above for non-Cadent GDNs by asking for permit numbers in the GD2 period associated with Highways Authorities that implemented permit schemes during the relevant averaging period. However, as above, under our proposed eight-year averaging period, there would be no change required for our GDNs, since the schemes were implemented in the first two years of RIIO-GD2.

Ofgem is wrong to disallow costs associated with charges and penalties

For the GDPCR1 Streetworks re-opener in 2011 and at RIIO-GD1 in 2012, Ofgem allowed what it considered to be an efficient level of cost for Streetworks charges and penalties, although at RIIO-GD1 Ofgem mentioned that local authorities were of the view that GDNs should aim for zero fixed penalty notices, and that Ofgem should not fund any associated costs. [258]

Subsequently, at RIIO-GD2, Ofgem changed its stance and disallowed costs associated with charges and penalties, for reasons best expressed in the Draft Determination at the time *"…as we think these costs are within GDNs' control and are levied by HAs due to a failure by a GDN or its contractors to comply with agreed permit conditions. These conditions are in place to ensure that sites are managed safely and effectively and there must be a strong incentive on GDNs to comply with these requirements*." [259] Although in its response to Draft Determinations we opposed Ofgem's stance,[260] at the Final Determinations Ofgem adhered to its new position.[261]

258 Ofgem (2012), "RIIO-GD1 Initial Proposals, Cost Efficiency Supporting document", para 4.19
259 Ofgem (2020), "RIIO-GD2 Draft Determinations, Gas Distribution Annex", para 3.127
260 Cadent (2020), "RIIO-GD2 Draft Determinations Response, GDQ38"
261 Ofgem (2021), "RIIO-GD2 Final Determinations Gas Distribution Annex, para 3.160

In the RIIO-GD3 Draft Determination, Ofgem's justification for disallowing charges and penalties is very similar to that expressed at RIIO-GD2, that the costs are within management control and since these penalties are levied by Highway Authorities due a failure to comply with "agreed permit conditions", which are in place to ensure sites are managed safely and effectively there must be a strong incentive on GDNs to comply with these requirements.[262]

There are many reasons, however, both of principle, and in practical application, why we believe these costs should be allowed and treated like other Streetworks costs. Some of these reasons we provided previously in our response to the RIIO-GD2 Draft Determinations, others are new:

- An efficient level of penalties would be allowed in a competitive market. In a fully competitive market, an efficient level of all costs, including those associated with unavoidable failings or shortcomings, would be included within prices and passed on to end consumers. We note that the Department of Transport has proposed that EV ChargePoint operators should be able to join utilities in obtaining permits via the Streetmanager system. [263] Once this occurs, the EV ChargePoint operators, acting in a competitive market, will be able to charge an efficient level of penalty costs to their customers, but utilities will not.
- Whether or not charges and penalties are within management control has no bearing on whether they should allowed. The vast majority of cost allowances are made for costs that are within management control.
- The skewed bargaining power between Highway Authorities and GDNs makes it more likely that GDNs are unable to comply with all permit conditions at all times. The phrase "agreed permit conditions" creates the impression that there are two contracting parties with equal bargaining power, which therefore come to a reasonable agreement on permit conditions. This is not the case. In reality, for planned work, on which the vast majority of cost is incurred, although GDNs can question draft permit requirements, ultimately, if the Highway Authority is determined to apply certain permit conditions, the utility will need to accept them – no matter how costly or onerous - or not carry out the work. This is why all GDNs that submitted Streetworks re-openers in Autumn 2024 included costs associated with permit requirements for Manned Traffic Lights, which utilities would rarely, if ever, use otherwise.
- It encourages GDNs to act inefficiently, increasing costs to customers. With a totex sharing rate of 50%, and charges and penalties being excluded from the Totex Incentive sharing Mechanism (TIM), to avoid incurring a 50p penalty, a GDN is incentivised to incur a substitute cost of up to £1. To explain, in executing a piece of work in the public highway a GDN could either pay a penalty of 50p, with 50p being payable by the company's shareholders themselves (as it is not charged to customers) or could take avoiding action. Shareholders would be willing to incur costs to them of up to 50p to avoid the penalty. As avoidance costs fall under TIM this would mean £1 in total could be spent to avoid the penalty, with that £1 cost then being charged equally to shareholders and customers. The total cost incurred to avoid the penalty is therefore higher than the cost of paying the penalty and thus inefficient.
- Disallowing charges and penalties is inequitable between GDNs because they incur different levels of cost depending on the nature of the streetworks regimes under which they operate. For example, SGN's Scotland GDN, operates under a different legal regime for Streetworks to that in England, [264] under which it has no permit schemes in place, and as a result it incurs no penalties for breaches of permit conditions in its area, although other charges can be incurred. As a result, in each price control period it has incurred a lower level of cost for Streetworks

262 Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para 5.262

263 Dept of Transport, Streetworks Access: EV ChargePoint Operators consultation outcome: December 2024

264 The New Roads and Streetworks Act 1991 is the foundational legislation for Streetworks in Great Britain. However, in Scotland it is amended and strengthened by the Transport (Scotland) Act 2005, rather than by the Traffic Management Act 2004, as is the case in England and Wales.

charges and penalties than any other GDN. For the RIIO-GD3 period, it plans to incur charges and penalties of 0.08% of gross totex, as compared to the GDN average of 0.20%.

- The efficient level of charges and penalties cost is above zero, as shown by the fact that all GDNs incur these costs, including the frontier GDN. For example, for the RIIO-GD2 period, the minimum cost for a GDN, excluding Scotland for the reasons explained immediately above, represented 0.13% of totex, and the maximum 0.50%.
- In addition, at the start of this section, we noted that, when Ofgem set Streetworks cost allowances at RIIO-GD1, the last time that GDNs were allowed provided allowances for charges and penalties, Ofgem mentioned that local authorities were of the view that GDNs should aim for zero fixed penalty notices, and that Ofgem should not fund any associated costs. [265] The fact that some Highway Authorities issue their own operations with "Shadow" Fixed Penalty Notices, for breach of permit conditions, further demonstrates that it is wholly unreasonable to expect GDNs to incur no costs for charges and penalties.

Ofgem's Draft Determination proposes not to allow an efficient level of cost for charges and penalties within allowances for Streetworks costs. If this is unchanged at Final Determinations, as shown in our response to FQ17 this will add further to the downward asymmetric skew that the aggregate price control places on equity investor returns. It will be essential for Ofgem's RORE analysis to reflect the effect of this disallowance on expected returns. Furthermore, the RORE analysis must also reflect the fact that in December 2024,[266] the government decided to double the charge for Fixed Penalty Notices and expand the time periods covered by s74 overrun charges by 40%, the costs of neither of which were factored into Business Plans. The increase in costs will further exacerbate potential underperformance.

As a result, we Ofgem should fund an efficient level of charges and penalties to be incurred by GDNs, and we propose that to do so, Ofgem include these costs in total Streetworks costs in its non-regression assessment approach.

[265] Ofgem (2012), "RIIO-GD1 Initial Proposals, Cost Efficiency Supporting document", para 4.19
[266] Dept for Transport, December 2024: Streetworks: fines and lane rental surplus funds – consultation outcome

GDQ42. What are your views on our proposed approach to applying the catch-up efficiency challenge?

Our response to GDQ42 has two key parts:

1. Where we address the level of the catch-up efficiency challenge set by Ofgem in the Draft Determination.

2. Where we assess how the challenge is applied to non-regressed cost categories.

The level of catch-up efficiency challenge set

The catch-up efficiency target should reflect estimation accuracy of Ofgem's benchmarking approach

Ofgem has proposed to set the catch-up efficiency challenge as a three-year glide path from the 75th percentile efficiency score to the 85th percentile efficiency score, the same as the approach adopted by Ofgem at GD2. Ofgem multiplies each GDNs' modelled costs by the catch-up efficiency challenge to determine allowances. This adjustment results in an efficiency challenge for any company Ofgem assesses to be less efficient than the company whose efficiency score sets the catch-up challenge. The approach set out in the Draft Determination is a more demanding target than the upper quartile (75th percentile) benchmark Ofgem used for RIIO-GD1, and which regulators have commonly and continually used at other price reviews (including most recently, Ofwat at PR24). We therefore propose that Ofgem use the 75th percentile to set the catch-up efficiency challenge at RIIO-GD3. We explain the justification for this proposal below.

As stated in our business plan, it is important that Ofgem takes into account the robustness and statistical performance of its model(s) when selecting the level at which to set the catch-up efficiency challenge. At GD3, Ofgem proposes to rely on a single top-down model, as opposed to multiple models (as is often the case in regulatory price controls), which risks overreliance on a single model which is mis-specified (as discussed in response to GDQ37). For example, at RIIO-ED2, Ofgem also used a glide path from the 75th to 85th percentiles to set the catch-up efficiency challenge, but it used three totex models and multiple disaggregated models to set DNOs' allowances, as opposed to the single totex model proposed by Ofgem for RIIO-GD3.

Moreover, despite the totex model exhibiting strong explanatory power (our error-corrected Draft Determination model has an adjusted R-squared of 0.92), the bottom-up models which justify the selection of cost drivers within the totex model exhibit much worse statistical performance, suggesting the drivers included within the CSV have a limited ability to control for the reasons why GDNs incur different levels of cost.

Given this, an upper quartile (75th percentile) catch-up efficiency adjustment would be more appropriate than a glide path from the 75th to 85th percentile.

Regulatory precedent highlights the importance of setting the target by assessing the reliability of modelled costs; Ofgem fails to do so

Comparative benchmarking models, including those that Ofgem uses in its Draft Determination, cannot separately identify genuine inefficiency from data error, omitted factors, and differences in cost allocation across companies. As such, Ofgem's estimated efficiency scores may conflate company inefficiency with model or statistical errors. For example, as discussed in our response to GDQ37, Ofgem's proposed GD3 model suffers from an omitted factor that would capture the increased efficient cost of operating in dense, urban environments such as London. As a result, it incorrectly interprets this additional cost as inefficiency.

Given the limitations of Ofgem's model (low explanatory power of the bottom-up models, data errors, omitted factor(s)), setting too stringent a catch-up target could result in unachievable cost targets. If translated into allowed levels of revenue, such cost targets would compromise companies' ability to

finance their licensed activities. To mitigate this problem, regulators tend to set an efficiency target at a less demanding level than the frontier company, as an acknowledgement that not all the variation in costs between companies left unexplained by econometric models represents inefficiency. Ofgem has itself acknowledged that the efficiency benchmark should be set based on the reliability of the benchmarking model. For RIIO-GD1, Ofgem justified the choice of the upper quartile rather than the frontier by the imperfection of its statistical models: [267]

> *"We defined efficient costs equal to the upper quartile (UQ) GDNs' costs rather than the frontier allowing for other factors that may influence the companies' costs. We also assumed that GDNs would close only 75 per cent of the assessed gap between their forecasts and the UQ. The use of the UQ is identical to previous price reviews (e.g. GDPCR1, and more recently the electricity distribution price review, DPCR5). Our proposed approach to closing the gap and the use of the UQ rather than the frontier acknowledges that a part of the difference in costs across the GDNs relates to factors other than GDNs' relative efficiency (e.g. statistical errors)."*

In addition to the limitations of comparative benchmarking more generally, Ofgem's Draft Determination also suffers from a number of calculation errors, which materially affect GDNs' relative efficiency and allowances. Whilst we have sought to identify and suggest solutions to these errors, the process to date, as well as the multiple errors baked into the Draft and Final Determination modelling at the GD2 process, suggests a high likelihood of Ofgem's Final Determination model containing data or calculation errors. Setting the efficiency frontier at a less stringent level (e.g., the 75th percentile) goes some way to acknowledging these potential errors within Ofgem's model which could lead to the under remuneration of GDNs.

Ofgem errs in justifying setting the catch-up efficiency challenge based on historical allowance performance

Ofgem also justifies the level of its catch-up efficiency challenge based on allowance performance in the RIIO-GD2 period, stating: "*Currently, three of the eight GDNs are expecting to spend less than their allowances in RIIO-GD2. This indicates setting the catch-up efficiency at the 85th percentile represents a stretching but achievable level of efficiency.*"[268] However, relying on allowance performance to justify the setting of the level of the catch-up efficiency challenge for the forthcoming RIIO-GD3 price control is incorrect due to:

- The inability to ascribe under/outperformance on costs to networks 'catching up', when they may well result in cost reduction due to workload reduction or other means which are not associated with an analogous mechanism to reduce allowances at the end of the price control; and
- The difficulty in accounting for errors in the setting of price control allowances which lead to some companies/networks achieving outperformance but not delivering catch-up.

[redacted]

[redacted]

[267] Ofgem (2012), "RIIO-GD1: Final Proposals – Supporting Document – Cost Efficiency", p. 7.
[268] Ofgem (2025), "RIIO-3 Draft Determinations Gas Distribution Annex", para. 5.280

Ofgem's application of the catch-up efficiency challenge to non-regressed costs

Ofgem errs in applying the catch-up efficiency challenge to non-regressed costs without justification

Ofgem calculates the efficiency scores which inform the calculation of the catch-up efficiency challenge based only on costs included in its regression analysis. This excludes two categories of separately assessed costs: non-regression modelled costs and technically assessed costs. While Ofgem does not include non-regression costs in the calculation of the efficiency scores, it still applies the adjustment to non-regression costs. The inconsistency between the cost base from which Ofgem calculates the adjustment, and the cost base to which it applies the adjustment, both create errors in Ofgem's allowance for non-regression costs.

Notably, Ofgem uses the efficiency scores (derived from regressed costs) to inform the stage B BPI for regressed costs, but not Stage B of the BPI for non-regressed costs. Instead, Ofgem calculates separate efficiency scores for separately assessed costs based on the ratio between GDNs' normalised, submitted costs and the modelled costs across the GD3 period.[269] This implicitly acknowledges that the efficiency scores calculated based on regressed costs are not indicative of GDNs' relative efficiency in non-regressed cost areas.

Ofgem makes no attempt to demonstrate that the efficiency scores calculated for each company based on regressed costs are also appropriate for the same GDN's non-regressed costs. There is no reason to impose a catch-up efficiency adjustment to a GDN's non-regressed costs without a credible assessment that its non-regressed costs include an element of inefficiency. By applying a catch-up adjustment based on regressed costs to non-regressed costs, Ofgem arbitrarily reduces allowances for non-regressed costs, without even attempting to demonstrate inefficiency. This arbitrary reduction in allowances for non-regressed costs is in addition to efficiency adjustments already made for non-regressed cost areas through the separate assessment itself. For example, allowed Streetworks costs are, in part, based on workload forecasts and unit costs, whereby the unit cost calculation already contains an efficiency adjustment. Therefore, this additional arbitrary reduction "double-counts" efficiency adjustments.

Ofgem also makes no attempt to justify that the same efficiency benchmark is appropriate for both regressed costs and for non-regressed costs. As we explain above, the benchmark should be set to reflect the reliability and accuracy of the efficiency modelling. While Ofgem does not successfully justify its choice of benchmark for regressed costs, it does not even attempt to justify the same benchmark for non-regressed costs. Ofgem has no basis for its assumption that its non-regressed cost modelling has the same degree of confidence, and therefore should have the same benchmark, as regressed costs. In fact, Ofgem states that it uses separate assessment in cases where there exist "*issues of data consistency or comparability between GDNs*".[270] It is therefore counterintuitive for Ofgem to apply a catch-up efficiency challenge derived from comparative benchmarking to costs which Ofgem itself concedes cannot be comparatively assessed.

By setting a target for efficiency improvement by benchmarking a subset of costs (regressed costs), the target Ofgem identifies will tend to be set by the companies that achieve particularly low costs in that category. If there are trade-offs between cost categories, those companies may have higher costs in other areas (e.g., that are separately assessed). This "partial benchmarking" will lead to a target for efficiency improvement that overstates the potential for companies to reduce their total costs. As acknowledged by Ofgem in its RIIO-ED2 Final Determination[271], partial benchmarking should not be used in the setting of the catch-up efficiency challenge.[272]

[269] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution", para. 5.334
[270] Ofgem (2025), "Draft Determination Gas Distribution Annex", para. 554
[271] Ofgem (2022), "RIIO-ED2 Final Determinations – Core Document", para. 5.592
[272] At RIIO-ED2 Ofgem changed its approach to applying the catch-up efficiency challenge between Draft and Final Determinations. In its

Given that Ofgem's non-regression benchmarking approaches include an element of efficiency adjustment, and as there is no valid justification set out for applying the catch-up efficiency challenge to these cost areas, to remedy this error, Ofgem should only apply the catch-up challenge to regressed cost areas (and not non-regressed). As shown in the table below, remedying this error based on our error-corrected model suite would increase our Allowances by £39m and the industry's by £62m.

Table 1: GDNs Allowances: Cadent Error-Corrected DD Model vs. Cadent Error-Corrected DD Model with no Catch-up Challenge Applied to Non-Regressed Costs (£m, 2023/24)

	Cadent Error-Corrected Model	Cadent Error-Corrected Model with no Catch-up Challenge Applied to Non-Regressed Costs	
	Allowance	Allowance	Delta to Corrected DD Model
EoE	2,129.93	2141.04	11.11
Lon	1,676.67	1693.97	17.30
NW	1,439.22	1444.90	5.68
WM	1,135.13	1139.83	4.70
NGN	1,542.63	1544.07	1.44
Sc	1,091.82	1094.35	2.53
So	2,438.78	2451.26	12.48
WWU	1,564.09	1570.97	6.88
Cadent Total	**6,380.96**	**6419.74**	**38.79**
Industry Total	**13,018.28**	**13080.41**	**62.12**

Note: Allowances reported are efficient modelled costs + bespoke outputs and technical assessments, including frontier shift.
Source: Cadent Analysis

Given that Ofgem does apply the catch-up challenge to non-regressed costs at Draft Determination, it should not cap these allowances prior to applying the catch-up challenge

As discussed above, in its Draft Determination modelling, Ofgem applies the catch-up challenge to both regressed and non-regressed costs ("modelled costs"). Whilst we do not agree with this approach, given that it is the case in Ofgem's Draft Determination model and could continue to be the case within its Final Determination model (albeit incorrect and unjustified), it is important that Ofgem does not "cap" GDNs' non-regressed modelled costs at the level of their submitted costs, prior to applying the catch-up challenge.

In previous price controls, including RIIO-ED2[273], Ofgem has "capped" GDNs' estimated modelled costs derived from non-regression analysis at the level of cost submitted by the GDN for that cost area. However, this would be the incorrect approach, if these modelled costs are subsequently adjusted downwards through the application of the catch-up efficiency challenge. Specifically, by capping a GDN's allowances at the level of their Business Plan forecast Ofgem is conceding that the GDN's forecast is efficient, then applying a further efficiency challenge would be inconsistent and incorrect.

Draft Determination, it proposed to calculate the catch-up efficiency target based on an unweighted average of three totex models, and apply this challenge consistency to modelled costs across all three models ("partial benchmarking"). All DNOs raised concerns with this approach, and for Final Determination, Ofgem amended its approach to calculate the catch-up efficiency challenge based on the results of combining the modelled costs from all models.
[273] Ofgem (2022), "RIIO-ED2 Final Determination Core Methodology Document", para. 7.531

Moreover, this approach (capping GDNs non-regressed modelled costs at the level of submitted costs) would be inconsistent with the approach used for regressed costs. For regressed costs, Ofgem allows GDNs' modelled costs to exceed their normalised submitted costs (and hence obtain an efficiency score less than 1) and then applies the catch-up efficiency challenge to all GDNs' modelled costs, including the frontier GDN(s). This is the correct approach, given that GDNs' modelled costs which exceed submitted costs will be adjusted downwards through the application of the catch-up challenge.

We note that Ofgem has not capped GDNs' non-regressed cost allowances prior to applying the catch-up efficiency challenge in its Draft Determination, and we would consider it a material error should Ofgem do so in its Final Determination.

GDQ43. Do you consider that the efficiency frontier should be set based on historical performance?

The efficiency frontier should not be set based on historical performance. If Ofgem were to adopt such an approach in its Final Determinations, this would represent a failure to comply with Ofgem's statutory and public law duties, in particular with respect to driving the best outcomes for consumers, ensuring GDNs are able to fund their regulated activities and adhering to the regulatory principles of proportionality and consistency. This is the case for at least three reasons, two substantive and one a failure of process:

1. Calculating the efficiency frontier based on historical efficiency scores would risk underfunding the whole industry, even the GDNs estimated to be most efficient over the RIIO-GD3 price control (see **Section A**)
2. A key purpose of the catch-up efficiency mechanism is to incentivise GDNs to put forward cost-efficient proposals in their business plans. Basing the efficiency frontier on historical performance would undermine this incentive and embed the assumption that GDNs which have historically been assessed to be efficient will continue to be efficient in the next price control, and vice versa (see **Section B**). The purpose is *not* to incentivise outturn efficiency (which is already driven by the Totex Incentive Mechanism).
3. Ofgem's Draft Determination does not explain how it would set the efficiency frontier based on historical performance. As we note below there are multiple ways it could be done. Therefore, this approach would not have been adequately consulted on if it were adopted at Final Determination. Companies only option to oppose it would be through a CMA appeal (see **Section C**).

Before addressing in further detail the two substantive reasons why the efficiency frontier should not be based on historical performance, it is important to acknowledge at the outset that it is not yet possible to provide a comprehensive response to GDQ43, since Ofgem does not provide a clear picture of what setting the efficiency frontier by reference to historic performance would look like or how it would work.

Ofgem states in its Draft Determination that "*We note that Ofwat has used 'actual' data from the previous 5 years when setting the efficiency frontier for the water companies. Since we are proposing to use both historic outturn and forecast data within our proposed model specification, we consider it may be appropriate to also use historic data to set the efficiency frontier. We intend to further consider approaches to setting the efficiency frontier, including setting the efficiency challenge using historical data, before finalising our decision at Final Determinations*".[274]

However, there are multiple possible interpretations of Ofgem's statement, and multiple ways of using historical data to set the efficiency frontier. For example:

- One approach would be to adopt the same approach that Ofwat uses to forecast companies' costs using regression results estimated on historical data only, and forecasts of the companies' cost drivers. Ofwat then calculates the catch-up efficiency target based on the most recent five years of outturn data (i.e. based on historical efficiency scores).[275] This approach assumes that the relationship between costs and their drivers remains constant over time. We assume that Ofgem does not propose to adopt this approach given that it states that "*benchmark models are considered more statistically robust the greater the number of observations included within the model*",[276] acknowledging that including forecast cost data within the regression model results in a more statistically robust outcome. However, it is unclear given Ofgem's statement on the efficiency frontier.

[274] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", paras. 5.281-5.282
[275] Ofwat (2024), "Final Determination, Expenditure Allowances", pg. 26
[276] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.197

- Alternatively, Ofgem's statement could be interpreted as Ofgem proposing to use the same approach as outlined in the GD3 Draft Determination, *except*, that the catch-up challenge will be calculated using a combination of GD1 or GD2 efficiency scores, rather than GD3 efficiency scores alone, as Ofgem does in its Draft Determination and has done in all recent RIIO price controls for gas and electricity distribution.

In light of the brevity and lack of detail in the Draft Determinations on the precise nature of the approach that Ofgem is considering, and the breadth of the potential outcomes, we cannot fully consider and provide an informed response to GDQ43 at this stage. The reasoning we have put forward in this GDQ43 response is therefore necessarily tentative. Nevertheless, to drive engagement forward as best we can, we have endeavoured in good faith to put forward key principles based on the information available.

Section A Regardless of the interpretation, calculating the efficiency frontier based on historical performance is unjustified, risks underfunding the industry, and undermining GDNs' efficiency incentives

If Ofgem were to adopt the same approach as Ofwat to setting the efficiency frontier (detailed above), it would risk underfunding the entire gas distribution industry (in a manner likely to represent a breach of Ofgem's statutory duties, including with respect to financeability). A key reason for this is that such an approach would not recognise that GDNs' efficient costs are increasing over time, and these increases cannot be captured through Ofwat's backward-looking modelling approach. Industry-wide cost increases are not a result of inefficiency but instead are a result of changing requirements on the GDNs (e.g., HSE legislation in relation to fatigue) and increased complexity of workload (e.g., in addressing Tier 1 mains replacement). Accordingly, there is a limit to the relevance of the costs incurred by GDNs in one price control period to those that are likely to need to be incurred in the next. Relying too heavily on estimated historical relationships between costs and drivers ignores future upward cost pressures when determining the basis for GDNs' efficiency frontier. Ofgem's vague assertion that *"the type of activities being undertaken by the GDNs in RIIO-GD3 are broadly comparable to those in RIIO-GD2"*[277] appears to show that Ofgem has unduly marginalised this issue. Ofgem's Draft Determination modelling only partially accounts for the upward cost pressures within GD3, since the relationship between costs and drivers is based on the average relationship over the GD1 to GD3 periods, and the regression model does not include drivers that explain future changes. However, within the GD3 Draft Determination approach, this limitation is addressed through the application of the catch-up efficiency adjustment to forecast costs, which ensures that one quarter (two networks) of the industry receive their submitted totex allowances, covering its Business Plan cost forecasts.

If instead, Ofgem were to adopt the approach to setting the efficiency frontier used by Ofwat, (which as briefly described above, does not account for changes in the relationship between costs and drivers over time, and does not apply a catch-up challenge based on GD3 efficiency scores / cost forecasts) this could lead to catch-up efficiency deductions that are disproportionate to the nature and extent of the costs that GDNs will need to incur in the RIIO-GD3 price control period. This would lead to underfunding of the entire gas distribution industry.

Notably, the historical cost benchmarking approach used by Ofwat has been cited as a contributing factor in the financial and service level difficulties which some water companies have experienced in recent years.[278] Specifically, Ofwat's approach of rolling forward historical cost levels is inherently incapable of funding the requirement for rising capital maintenance expenditure that the industry requires (comparable to the repex expenditure required in the gas distribution industry) and has likely contributed to the majority of companies in the industry overspending their cost allowances. Adopting Ofwat's approach would therefore put the financeability of energy networks and the credibility of the RIIO regulatory framework at risk, in the same way as the water sector has faced financial difficulties

[277] Ofgem (2025), "RIIO-GD3 Draft Determinations – Gas Distribution Annex", para. 5.279
[278] See paragraphs 387-389 of the Independent Water Commission report on the problems with using econometric modelling and industry wide benchmarking.

in recent years.

Moreover, Ofwat's modelling suite is far more sophisticated than that of Ofgem's gas distribution models, as it is underpinned by richer underlying data, and a wider set of models. Ofwat's water benchmarking models have 17 companies over 13 years to comparatively assess (resulting in 221 observations), compared to the eight GDNs in Ofgem's GD3 modelling. Therefore, adopting a historical approach to calculating the efficiency frontier in the GD sector is likely to be even more unreliable than doing so in the water and wastewater sectors.

Even if Ofgem were to adopt the approach of setting the efficiency frontier based on GD1 or GD2 efficiency scores (with these scores based on a regression containing all time periods (GD1 – GD3) – the second approach described above), it would still risk underfunding the entire industry. This approach could also still apply a catch-up challenge to all GDNs, even those which Ofgem assesses to have submitted efficient business plans for GD3, if the efficiency frontier calculated based on the historical time periods is lower than even the most efficient GDNs' GD3 efficiency score. This problem could arise, not only in circumstances where industry costs are increasing, but also where they are decreasing. For example, it could still arise in conditions of declining costs if the most efficient GDN is estimated to be more efficient in the previous price control period than in the future price control period.

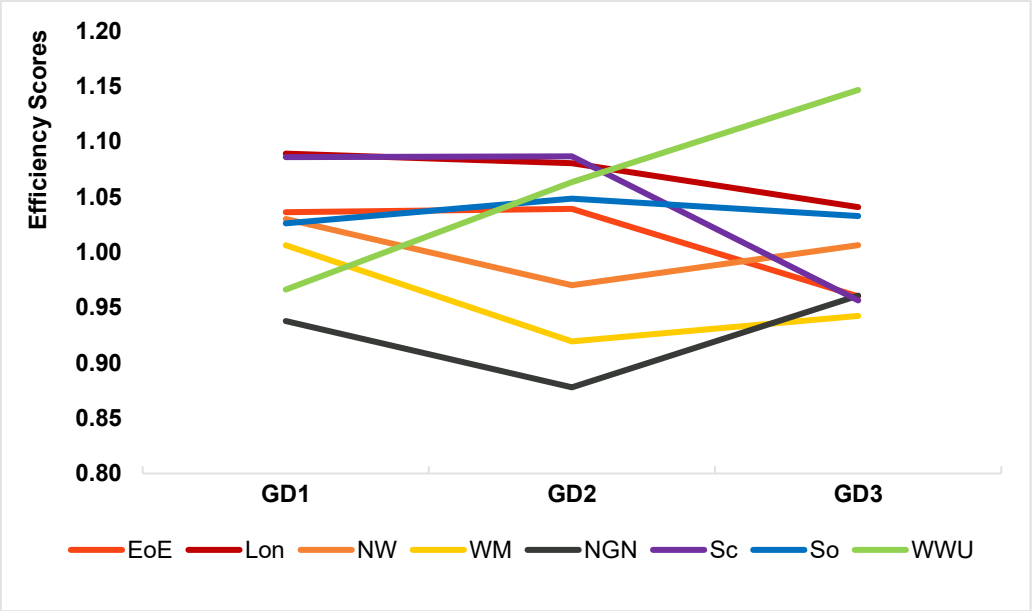
Section B Calculating the efficiency frontier based on historical performance would undermine the purpose of the catch-up efficiency mechanism as a forecast efficiency incentive

Ofgem adopting the second approach outlined above would not only risk underfunding the entire gas distribution industry but also undermine the incentive for GDNs to forecast efficient costs, given that the efficiency of their business plans would not be used to inform the efficiency frontier and resulting catch-up efficiency challenge. Undermining a key incentive for GDNs to submit efficient business plans would be likely to lead to worse outcomes for consumers. In this scenario, GDNs' business plans would only be used to estimate the regression, and hence GDNs could be incentivised to submit cost and drivers forecasts that influence the regression estimation to their advantage, and to ensure that they receive their actual forecast costs. For example, if a company expects the catch-up efficiency target to be set at 0.95 (i.e. a 5% cut to modelled costs), it could back-calculate what modelled costs it would need to obtain in Ofgem's modelling, and hence what forecast costs it should report in its business plan to ensure it obtained its actual forecast costs. Since the efficiency scores are not based on these forecast costs, there would be no negative repercussion for this (except via the BPI, which we assume would be based on GD3 efficiency scores).

Importantly, if Ofgem were to set the efficiency frontier based on historical performance (regardless of the specific approach adopted) it would embed the assumption that GDNs which have historically been assessed to be efficient continue to be efficient in the next price control, and vice versa. As a result, the approach would fail to acknowledge that some GDNs are in fact catching up to the efficiency of others or even overtaking them, as is the intention of the gas distribution price control framework. Ofgem's adoption of this approach, therefore, would be inconsistent with the principle of comparative benchmarking, as it entrenches the positions of GDNs who may have previously been efficient, but are not anymore. It also provides little opportunity, or incentive, for historically inefficient GDNs to catch-up.

As shown in the Figures below, the estimated efficiency (measured by efficiency scores) for each GDN fluctuate significantly over time, including some GDNs "catching up" to others. For example, our West Midlands network becomes the most efficient network over the RIIO-GD3 period, overtaking the NGN frontier network at RIIO-GD2 when assessed via our error-corrected Draft Determination model, while others follow the opposite tend.

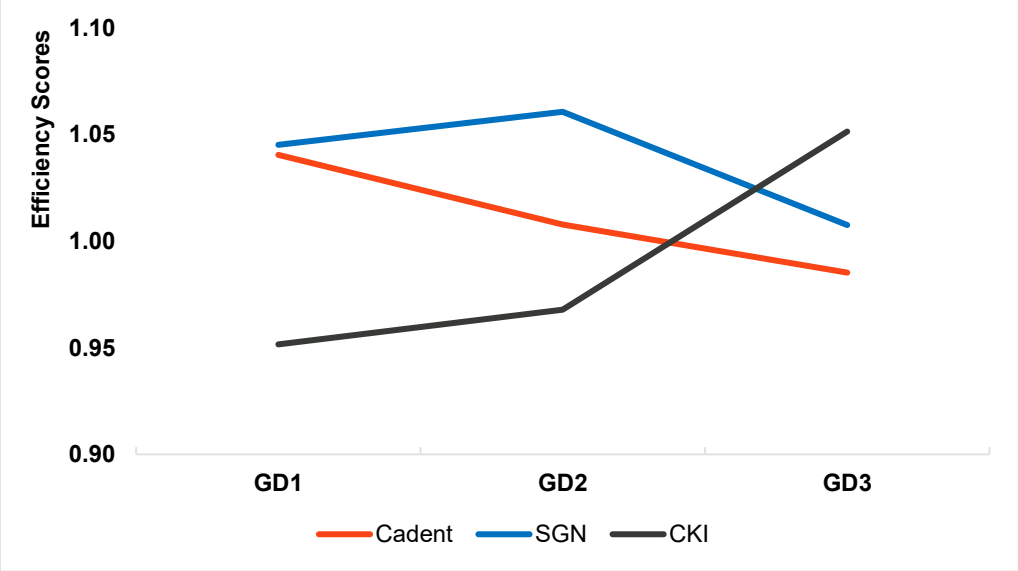
Figure 1: GDNs' Efficiency Scores GD1 – GD3 (Cadent Error-Corrected model)



Source: Cadent Analysis

Moreover, Figure GDQ43-2 below shows that Cadent as an ownership group has been "catching up" to the other ownership groups since the start of the RIIO framework, becoming the first ranked ownership group in the RIIO-GD3 period. This has, in part, been incentivised by the catch-up efficiency challenge. If Ofgem were to instead calculate the catch-up challenge based on historical performance, this incentive would no longer be present for the non-frontier ownership groups. Further, Ofgem would be failing to recognise the work we have undertaken in driving these efficiency improvements in our organisation, and instead we would continue to have our forecast expenditure cut based on our historical performance.

Figure 2: Ownership Group Efficiency Scores GD1 – GD3 (Cadent Error-Corrected model)



Source: Cadent Analysis

Therefore, it would clearly be wrong to assume current efficiency scores (and associated rankings) will persist into the future.

Section C Ofgem has not adequately consulted on how it would set the efficiency frontier based on historical performance in practice

Given the extent of the uncertainty in the Draft Determinations on how setting the efficiency frontier based on historical outturn costs would work in practice (as described above), if Ofgem were to adopt any historical-performance-based approach at the Final Determination, such approach would not have been adequately consulted upon and tested with the GDNs through the GD3 process. If any GDN were to have an objection to the adopted approach, it would have no option but to appeal the decision to the CMA.

Conclusion on our response to GDQ43

Given these significant concerns in relation to the use of a historical approach to setting the catch-up efficiency target, including the scope for underfunding of the industry, creating perverse incentives for GDNs when forecasting their costs, and embedding the notion of which GDNs are efficient and which are not, it would be wrong for Ofgem to calculate the efficiency frontier based on historical performance.

GDQ44. Do you agree with our assessment of technically assessed costs and bespoke outputs?

As part of Ofgem's cost assessment it excludes specific costs incurred by our networks (and other networks) from comparative benchmarking and assesses them on a bespoke technical basis. Below we set out our views on the outcomes of Ofgem's Technical assessment of costs. Our response to this question should also be read alongside the Cost Exclusions section of GDQ36, in particular as for Final Determinations we are proposing different cost exclusions to those made at Draft Determinations, which may require Technical Assessment for Final Determinations.

In general, we are supportive of the outcomes reached at Draft Determination by Ofgem when technically assessing costs. In particular for: the **Digital Platform for Leakage Analytics (DPLA), Tinsley Viaduct, London Medium Pressure** and **Grays Medium Pressure**, where Ofgem has recognised the efficiency of our cost forecasts by providing funding for these works in full.

We also support Ofgem's Draft Determination decision to approve our request for funding for **Advanced Leakage Detection (ALD)** subject to the decision reached for RIIO-3 and the related RIIO-2 re-opener application we have made for funding via the NZASP mechanism being aligned. In our response to GDQ2 we provide updated cost information on this activity for assessment at Final Determination (also noted in our response to GDQ36).

For further views on these topics please see our responses to:

- GDQ2 – DPLA & ALD
- CADQ4 – Tinsley Viaduct
- CADQ2 – London Medium Pressure
- CADQ3 – Grays Medium Pressure

We disagree, however, with the assessment undertaken by Ofgem regarding:

- **Major Project – West Winch.** We proposed that this major project is excluded from comparative benchmarking, with our reasoning explained within Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach and continue propose its exclusion for Final Determinations.[279] We disagree with Ofgem's decision to disallow our costs in full and have provided additional information to Ofgem's engineering team on the feasibility and design study to be taken into account for technical assessment at Final Determination. Please read our responses to CADQ8 and CADQ14 which detail this information.

- **Iron Stubs.** We have set out the rationale for why we believe this cost category should be excluded from comparative benchmarking within Appendix 3 to our Business Plan: Cost Assessment and Benchmarking Approach.[280] At Draft Determination, Ofgem proposed to not include any forecasts for iron stubs costs at Draft Determinations (i.e. it disallowed workload implicitly), and asked GDNs to provide more information on Iron Stubs as part of their consultation responses. Ofgem also stated that it plans to work with the GDNs to better understand the basis of Iron Stubs costs forecasts in network business plans. We understand, based on this, it is Ofgem's intent to fund stubs expenditure at Final Determinations once further information has been received. Therefore, whilst we disagree with the decision made at Draft Determinations, we will work with Ofgem (along with other GDNs) to provide further information on our cost forecasts. Please read our response to GDQ8 and CADQ14 for further information.

- **Cyber Security Opex and Capex.** We have specific comments on Ofgem's Draft Determination on our Cyber plans and provisional allowances. We have held productive discussions with Ofgem's Cyber team post our business plan submission and provide further

[279] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.2
[280] Cadent (2024), "RIIO-GD3 Business Plan – Appendix 3: Cost Assessment and Benchmarking Approach", Section.3.2

justification for the need for investment and our spend forecasts in our Cyber consultation response documents. Due to the sensitive nature of this information, this is not disclosed elsewhere in our core response documents.

- **Physical Security (PSUP) – Capex.** Our proposals for PSUP capex were assessed as unjustified at Draft Determination. We are now providing further information requested by Ofgem's engineering team in advance of our providing this response. As part of our response to Draft Determinations, we are also resubmitting evidence on PSUP capex which results in the level of costs changing. These revised costs are set out in our response to GDQ36. Please read also our response to CADQ14 which provides the further supporting information and details on our justification for investment and changes made in our Draft Determination response.

- **IT & Telecoms.** Ofgem's assessment of GDNs IT&T investments built on the approach from RIIO-GD2. Non-operational IT, Operational Technology and IT Business Support costs were in the scope of a pre-modelling IT&T technical review, but not Data & Digitalisation or Cyber costs, which were assessed separately. It also did not include lower materiality BAU IT costs with associated IDPs. Please read our response to GDQ33 which explains why we disagree with some of the outcomes from Ofgem's assessment approach for IT&T.

- **Data and Digitalisation.** Please read our response to CADQ16.

GDQ45. What are your thoughts on our approach to disaggregating cost allowances?

We support the use of totex models in benchmarking the efficient level of GDN costs for the GD3 period, however, such models are limited, for example in comparison to bottom-up models, in their ability to disaggregate i.e. to attribute allowances accurately to individual activities. Disaggregation is needed so that Ofgem can monitor performance against allowances and also so that in-period mechanisms, such as Price Control Deliverables (PCDs) can operate. To be successful, the method of disaggregation needs to fulfil four criteria.

First, to calculate allowances accurately for individual activities or projects covered by regulatory mechanisms, such as Uncertainty Mechanisms, PCDs, and Bespoke Outputs. An example is the London Medium Pressure project, to replace 15.87km of high-risk Tier 3 iron mains. The costs of this project have been excluded from the totex regression, and are subject to PCD, for an allowance of £83.4m. [281] If allowances such as this are not calculated accurately, skewed incentives would result, with GDNs incentivised to avoid work, even if desired by customers, on which they cannot cover their efficient costs, and to carry out work, even that less desired by customers, on which they are able to cover their costs.

Second, to calculate allowances accurately for higher-level price control activities, such as Emergency or Maintenance. This is required because GDNs have increasingly needed to be able to explain to Ofgem the variances between actual, outturn, costs and the associated level of allowances set by the price control at the activity level. Clearly, if the disaggregation of price control allowances is not accurate, then the explanation of variances is not meaningful, leading to confusion, frustration, wasted work, and customers bearing at least part of the cost of this inefficiency.

Third, allowances need to be calculated both on a gross basis i.e. before customer contributions and on a net basis, after taking account of them. This is because although the assessment of efficiency for most activities is carried out on a gross basis, such as for those costs covered by the totex regression, for all activities allowances are set on a net basis. Furthermore, the results of the disaggregation will only be accurate if the net-to-gross ratio is calculated correctly, after taking account of workload disallowances, costs moved into uncertainty mechanisms and costs treated as bespoke Outputs, or those that are technically assessed, as described in our response to GDQ37. If this is not done, the disaggregation will be incorrect.

Fourth, it needs to be carried out on a timely basis i.e. at the same time as Final Determinations and again following any subsequent CMA appeal. If this is not done, for the intervening period, GDNs will not know what their incentives are, and Ofgem will be unable to compare outturns against allowances except at the highest level, leading to confusion, uncertainty, and inefficiency as noted above. This was the case for RIIO-GD2, where the lag in completing totex disaggregation was significant from the time the actual price control was set.

For those activities and costs covered by the totex regression, such as Emergency, Repair, Business Support activities for example, after taking account of exclusions, reclassifications, workload disallowances, movement to uncertainty mechanisms and any other items subject to separate assessment, the same proportion of business plan costs needs to be applied uniformly across all activities covered by the regression. For example, if for a GDN, £100 of cost enters the totex regression, and £98 is found to be the efficient level of cost, then for all cost activities covered by the totex regression, the disaggregated allowance needs to be calculated as 98% of the business plan cost, having deducted exclusions, reclassifications, workload disallowances, movements to uncertainty mechanisms and any other items subject to separate assessment. For those activities and costs outside of the totex regression, such as those subject to technical assessment and non-regressed costs, the level of allowance for each item is already clear from Ofgem's modelling files. Note that it is essential that disaggregation is not carried piecemeal, but on a comprehensive basis, so

[281] Ofgem (2025), "RIIO-3 Draft Determinations Cadent Annex", para 2.12

that it is clear that the sum of all activities and those projects covered by regulatory mechanisms adds to the total net cost allowance for each GDN.

In addition, in order for the totex disaggregation to be completed on a timely and accurate basis, it needs significant attention from Ofgem and GDNs both before and after FD, including at the Cost Assessment Working Group (CAWG).

GDQ46. Do you agree with our proposed TIM sharing factor?

Subject to Ofgem's Final Determination positions on totex allowances remedying clear errors in the Draft Determination cost assessment (expended upon in our wider response), we support the proposed TIM sharing factor of a symmetrical 50% for under and overspends relative to totex allowances. This in line with our response to Ofgem's Sector Specific Methodology Consultation (SSMC).

As set out in our response to FQ17, based on the independent analysis of Economic Insight the RIIO-3 package of allowances and incentives at Draft Determination does not represent a fair bet with a materially more asymmetrically skewed RORE range than set out in Ofgem's Draft Determination Documentation (this is particularly pronounced for our London network). This analysis also shows that the level of RORE is largely dependent on totex over and underspend, rather than over or underperformance on Output Delivery Incentives (ODIs) – meaning that the precision with which ex-ante totex allowances are set is centrally important to determining whether the sharing factor set out is appropriate. Given the level of computational, logical and methodological errors and issues in Ofgem's cost models, we have concern that the cost efficiency targets set by Ofgem will be unduly stretching

As a result, we have given consideration to whether greater sharing is needed to protect investors so that they are able to earn their required return and not risk jeopardising financeability due to the inaccurate setting of allowances at Final Determinations. However, at the same time, clearly it is important that customers remain protected from totex overspend where it is within company control and that companies, where possible, are incentivised to generate efficiencies and appropriately share the benefits of these with customers. Therefore, on balance, we think, subject to Ofgem's Final Determination positions on totex allowances remedying clear errors in the Draft Determination cost assessment, the proposed sharing rate is appropriate, with Return Adjustment Mechanisms (RAMs) offering a further risk reduction mechanism, for potential extremes of performance deviation from baselines to support and protect customers and investors.