Cadent

Your Gas Network

Appendix 09.25 Mains Diversions Chargeable below 7 bar

RIIO-2 Spend: XXXX

Investment Decision Pack Overview

This investment pack outlines the scope, costs and benefits for our proposals. We have prepared an Engineering Justification Paper (EJP) for these interventions but have not prepared a Cost Benefit Analysis as this work is mandatory and predominantly funded by third parties.

Overview

Where third party activity occurs over or nearby to gas mains, we may need to divert or relocate those mains to minimise the risk of damage and/or to ensure that the assets can be safely operated and maintained in future. This work is mandatory in order to meet our obligations under the Pipeline Safety Regulations, 1996. Most of the costs associated with the diversion are chargeable to the third party.

Diversions are typically chosen as a last resort when other more cost-effective solutions are not feasible. The options for undertaking diversion work are assessed for each specific case (on a case-by-case basis) always looking at the least cost options first.

At the programme level, we have assessed the overall volume and cost of chargeable diversions that may be required in RIIO-2. We are proposing to use information on the workload and average costs in RIIO-1 as the basis for our forecast in RIIO-2. We considered four options for this:

- The maximum workload in any year of RIIO-1
- The average workload across RIIO-1
- The minimum workload in any year of RIIO-1
- A more conservative view based on a percentage (80%) of the minimum workload in RIIO-1

There is some uncertainty associated with the volumes (and complexity) of diversion work required in future years. Given this, our preferred approach is to include only the *minimum workload* that can be reasonably expected in the base plan (i.e. Option 4), along with an uncertainty mechanism to address any variation beyond this minimum level (Appendix 10.12 Diversions). We remain open to discussion with Ofgem on how best to manage this uncertainty but believe that using an uncertainty mitigation approach protects customers from funding unnecessary costs.

A summary of the preferred option is set out in the table below.

Summary of preferred option (base plan)	Value
RIIO-2 Length	**76.2 km**
RIIO-2 Expenditure	Redacted due to commercial sensitivity
RIIO-2 Third Party Contributions	
RIIO-2 Net Expenditure	

Table of Contents

2. Introduction

This document sets out our proposals for the diversion of pipelines driven by the activity of third parties (including mining, infrastructure, residential or commercial development etc.). Where third party activity occurs over or nearby to gas mains, we may need to divert or relocate those mains to minimise the risk of damage and/or to ensure that the assets can be safely operated and maintained in future. This work is mandatory in order to meet our obligations under the Pipeline Safety Regulations, 1996. Most of the costs associated with the diversion are **chargeable to the third party**.

Specifically, the investment requirements covered in this document are related to Cadent investment line numbers 45 Mains Diversions <7bar.

We note that Ofgem is not expecting CBA for workloads that are driven by, and majority paid for by, third parties, such as chargeable diversions. We have nonetheless developed this investment case in order to demonstrate the judgements we are making in terms of the forecast workload and costs for RIIO-2, as well as the residual cost that cannot be recovered from third parties. The case also helps inform the uncertainty mechanism set out in Appendix 10.12.

There is uncertainty associated with the volumes of diversion work required in future years. Given this, our approach is to include only the *minimum workload* that can be reasonably expected (having regard to the minimum workload from RIIO-1) in the base plan, along with an uncertainty mechanism to address any variation beyond this minimum level. This new approach is the best means to protect customers from funding unnecessary costs but are open to working with Ofgem on how to best protectcustomers.

This document **excludes** investment for non-chargeable diversions which are covered in Appendix 09.24 Mains Diversions Non-Chargeable below 7 bar. Mandatory diversions associated with complex national infrastructure projects (HS2, Heathrow Expansion, Lower Thames Crossing) are also not included in this investment case.

3. Equipment Summary

As at the 2018/19 RRP there are 126,250km of distribution mains across Cadent's network. This is summarised by material for each network in the table below.

Pipe Material	EoE	Lon	NW	WM
PE	37,048	13,716	24,929	16,140
Steel	3,011	978	1,414	1,500
Iron	9,284	5,605	6,858	5,697
Other	1	-	68	-
Total	**49,344**	**20,299**	**33,270**	**23,337**

Table 1: Km Distribution Mains (< 7 bar) in Cadent

Although mains diversion is the most common activity within this area, the investment paper also allows for movement of other network assets – valves, governors, cathodic protection units etc.

4. Problem Statement

We have a responsibility under the Pipeline Safety Regulations, 1996, to ensure we have access to our pipes in order to examine them and to safely carry out maintenance work. Regulation 7 states: 'The operator shall ensure that no fluid is conveyed in a pipeline unless it has been so designed that, so far as is reasonably practicable, it may be examined, and work of maintenance may be carried out safely.' If third party activity (e.g. housing or industrial development) occurs over or nearby gas mains, we may need to divert or relocate those mains to minimise the risk of damage and to ensure that the assets can be safely operated and maintained in future. Diversions are typically chosen as a last resort when other more cost-effective solutions (such as direct abandonment of the asset) are not feasible.

There are several different types of diversion. This document covers chargeable diversions only – it does not cover non-chargeable diversions or mandatory diversions associated with national infrastructure projects.

Chargeable diversions typically occur where an external developer or customer is planning new development or wants to carry out construction work near or over an existing gas-pipe. If this poses a risk to the safe and cost-effective operation of our assets, we will need to undertake work to mitigate or protect the gas-assets. The cost of this work can (typically) be charged to the specific developer or customer.

If we do not carry out the required work, there is a risk that our pipelines and infrastructure will be damaged by the development or third-party construction activity. It may also mean that we are unable to safely, quickly and cost-effectively operate and maintain our pipeline-assets, or secure supply in the event of an emergency. If this is the case, we would be in breach of our responsibilities under the Pipeline Safety Regulations.

Required outcome

We have an absolute duty to comply with the Pipeline Safety Regulations. In addition, customers have told us that safety is amongst their top priorities. The required outcome for this investment is therefore to ensure that we can access our assets in order that they can be safely examined and maintained going forward and that those assets do not pose heightened risks to third parties.

Measuring success

Success is measured by ensuring a safe operation, legal compliance, and avoiding any failure which leads to downstream interruptions or safety issues. We will also seek to deliver diversion activity in such a way as to minimise impacts on the developer, providing good customer service and enabling new projects to be developed.

4.1. Narrative Real-life Example of Problem

We aim to engage with developers before they commence work, however in some cases we need to undertake retrospective claims.

One such example occurred where an asset that had been built over by the Trafford Centre in Greater Manchester. The 3rd party had built over a 250mm pipe which provides gas to the rest of the site.

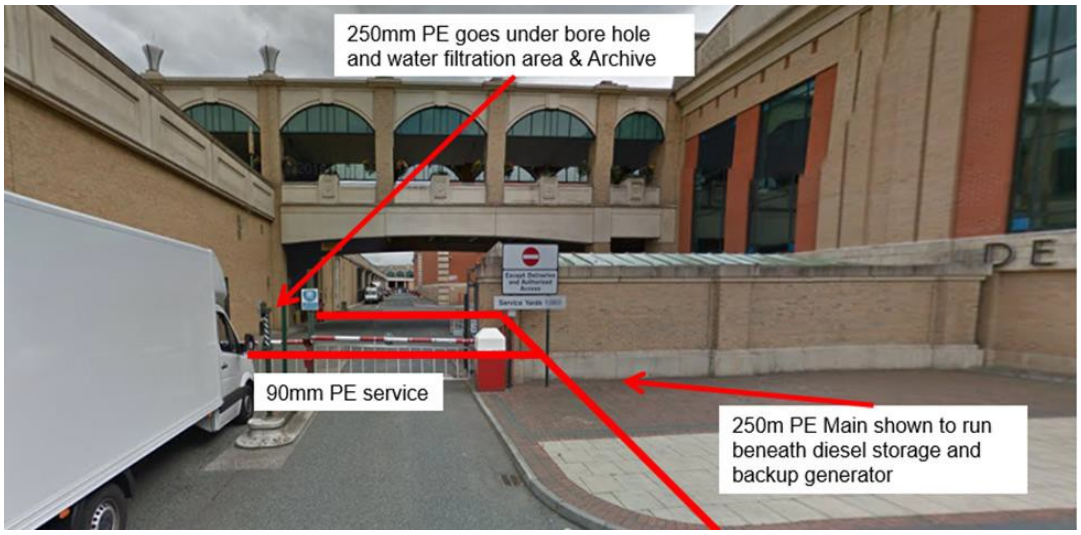

Figure 1: Line of 250mm Built Over Asset

Due to this build over we are unable to comply with regulation 13 “Requires the operator to ensure that a pipeline is maintained in an efficient state, in efficient working order and in good repair” (we cannot inspect or repair the asset) and regulation 15 “No person shall cause such damage to a pipeline as may give rise to a danger to person” (The Trafford Centre have built over the pipe which could result in danger to persons in the event of an escape).

In this instance the pipes were laid in order to connect premises owned by a landowner. Where the pipes crossed land owned, a form of statutory licence is created giving us rights to repair, maintain and renew the pipes. We may have a claim to compensation where those rights are interfered with by building over the pipe, particularly if it can be shown it’s no longer safe to keep the pipe in situ. This legal framework ensured that the land owner paid for the pipe to be moved.

The diversion was estimated to cost approximately **XXXX**. Because in this case the build over can be deemed as an “intentional act” we can look to recover the cost of necessary works to move the pipework section.

4.2. Spend Boundaries

The scope of work for each intervention/diversion varies significantly for each individual case, but may cover elements such as:

- Diversion works for pressure tiers LP (0 <=75mbar), MP (>75mbar <=2bar) and IP (>2bar <=7bar) and relate to all pipeline material types and diameters ranging from <=75mm to >630mm
- Also, movement of any other network fittings e.g. valves or governors which are in the way of development
- Purchasing land parcels
- Improving pipeline easements

There are no known overlaps or interdependencies with other investment cases.

5. Probability of Failure

The main driver of investment in this case is not the (inherent) risk of asset failure.

Rather, it is driven by our statutory obligation under the Pipeline Safety Regulations to ensure we can access the assets in order to examine and maintain them and that they do not pose a risk to the public.

The pipelines within this investment case are known risks i.e. they are already in breach of PSR (or would be during or after construction).

As such, we have not undertaken detailed probability of failure analysis. Rather we have considered the amount of work that has emerged during RIIO-1 to help inform our plans for the future (see discussion below).

5.1. Probability of Failure Data Assurance

As above, not relevant in this case.

6. Consequence of Failure

The construction of a building or structure directly over gas assets has the potential to adversely affect the integrity of the pipework and our ability to properly maintain it. It also represents a material risk to the public.

Built over assets represent a risk for the following reasons:

- **Gas entry into buildings**: The pipework that is located beneath buildings or structures provides a preferential route for gas ingress into the premises. Depending on the pipework interaction with the building, escaping gas may accumulate in voids leading to a potentially explosive atmosphere.

- **Occupier safety (built over services)**: There is a risk that the change in environment where our assets are located will pose a risk to occupier safety whereby the emergency control valve (ECV) may be inaccessible meaning the meter installation and internal pipework will not be able to be isolated by the customer and/or the service pipework may lack fire resistivity in its new environment.

- **Pipework loading**: The pipework is at risk from loads applied by the new building or structure and is more susceptible to damage. Similarly, in instances of environmental change, river bank erosion landslip the environment around the pipe alters creating increased risk of pipeline failure.

- **Pipework access**: The installation of a building or structure above the pipe prevents the Company from carrying out its obligations under the Pipelines Safety Regulations (1996) to ensure the pipe is accessible for maintenance and that it is maintained in an efficient state, efficient working order and in good repair.

7. Options Considered

Within this investment case there is only one type of work, the diversion of assets which are chargeable to customers.

The nature of chargeable diversions is that they are reactive, driven by demand for new development and construction. It is therefore difficult to accurately predict the volumes and complexity of work needed in future years.

Chargeable diversions investment is to remove the risk from a gas asset which is beneath/in close proximity to a building. Our first step when developing solutions, is to identify the need for the existing asset. Initially, we will look at the feasibility of abandoning the pipe. Abandonment is our preferred option as long as all customers will continue to have a resilient gas supply. Where gas supplies cannot be preserved then the only option is to reroute the assets. Diversions of mains ensures a continued, resilient service to our customers whilst giving us certainty that the pipe is in the right location and no safety risks will occur for the foreseeable future.

We are proposing to use information on the workload and costs in RIIO-1 as the basis for our forecast in RIIO-2. We consider this to be a reasonable, representative, basis for the forecast at a programme level.

There are a number of different options for using the RIIO-1 workloads as the basis for the forecast of chargeable diversions at a programme level:

- **Option 1:** The maximum workload in any year of RIIO-1
- **Option 2**: The average workload across RIIO-1
- **Option 3:** The minimum workload in any year of RIIO-1
- **Option 4**: A conservative view based on a percentage of the minimum workload in RIIO-1

For all options we have calculated a workload based on RIIO-1 volumes for each network and average mix across diameter bands over RIIO-1. We have then calculated an average unit cost (using RRP data for each diameter band, uplifted to a consistent 2018/19 price base) by diameter (from the last four years of RIIO-1) to distribute the total cost across diameter bands. Costs in 2013/14 and 2014/15 were excluded from the analysis as the costs across all diameters had been smoothed in the reporting. This is a reasonable approximation of the likely unit costs in RIIO-2 because this is the actual cost of carrying out the work in RIIO-1. We have applied efficiency to these unit costs**.** The unit costs derived, and the efficiencies applied, are discussed in Section 7.6.

These options are discussed below.

7.1 Option 1: The maximum workload in any year

This approach would see us use the maximum length of diversion carried out in RIIO-1 to forecast RIIO-2 volumes and cost.

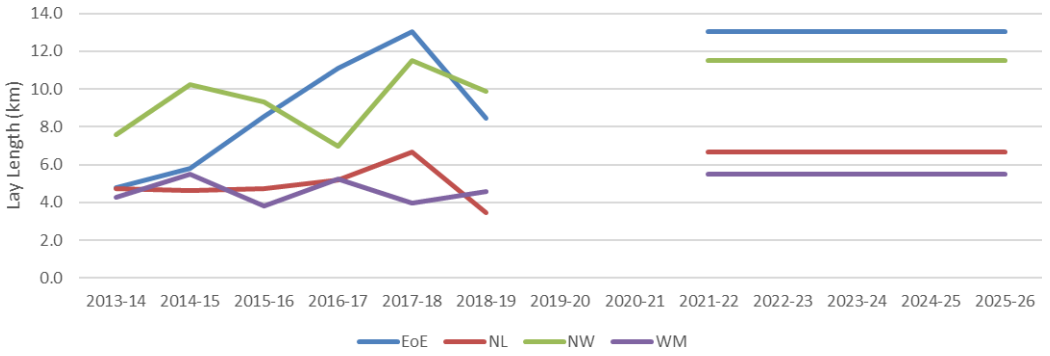

Figure 2: Max Approach to Forecasting Chargeable Diversions

Using the maximum year to forecast diversions gives an investment length of 37km per annum. This has a net cost of (once contributions are considered) **XXXX** over RIIO-2. With this option, there is a risk that customers will fund more costs than necessary, unless the level of demand in every year of RIIO-2 exceeds the maximum year in RIIO-1. This scenario is viable if national economic growth is strong.

The resulting volumes and cost profiles are set out below.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	13.0	13.0	13.0	13.0	13.0	**65.2**
Lon	6.7	6.7	6.7	6.7	6.7	**33.3**
NW	11.5	11.5	11.5	11.5	11.5	**57.6**
WM	5.5	5.5	5.5	5.5	5.5	**27.4**
Total	**36.7**	**36.7**	**36.7**	**36.7**	**36.7**	**183.4**

Table 2: Volumes for Option 1 (km)

Assuming a 93% customer contribution and an efficiency factor, the following table provides the total net repex required.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
Lon						
NW		Redacted due to commercial sensitivity				
WM						
Total						

Table 3: Net Repex for Option 1 (£m)

7.2 Option 2: Average workloads across RIIO-1

This approach would see us use the average length of diversion carried out in RIIO-1 to forecast RIIO-2 volumes and cost.

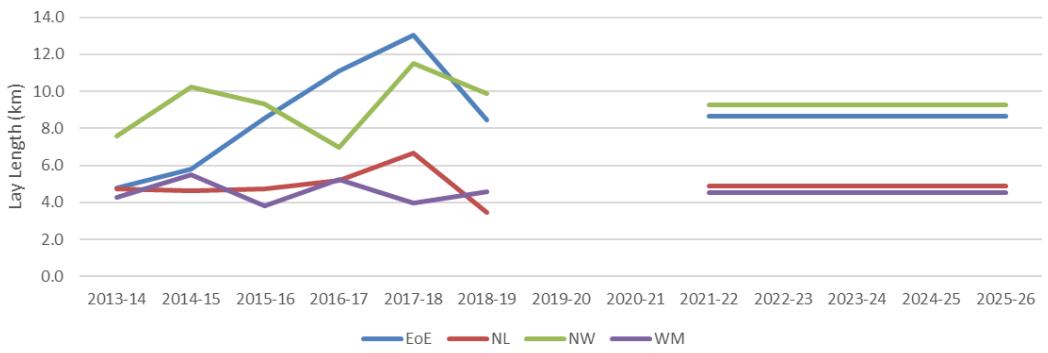

Figure 3: Average Approach to Forecasting Chargeable Diversions

Using the average year to forecast diversions gives an investment length of 27km per annum. This has a net cost of (once contributions are considered) **XXXX** over RIIO-2. With this option, there is a risk that customers will fund more costs than necessary, unless the RIIO-2 average exceeds the RIIO-1 average. While this is possible, there is considerable uncertainty about the level and profile of demand and hence a risk that customers will fund unnecessary costs in any given year.

The resulting volumes and cost profiles are set out below.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	8.6	8.6	8.6	8.6	8.6	**43.2**
Lon	4.9	4.9	4.9	4.9	4.9	**24.5**
NW	9.3	9.3	9.3	9.3	9.3	**46.3**
WM	4.6	4.6	4.6	4.6	4.6	**22.8**
Total	**27.3**	**27.3**	**27.3**	**27.3**	**27.3**	**136.7**

Table 4: Volumes for Option 2 (km)

Assuming a 93% customer contribution and an efficiency factor, the following table provides the total net repex required.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
Lon						
NW						
WM						
Total						

Redacted due to commercial sensitivity

Table 5: Cost profiles for Option 2 (£m)

7.3 Option 3: The minimum workload in any year

This approach would see us use the minimum length of diversion carried out in RIIO-1 to forecast RIIO-2 volumes and cost.

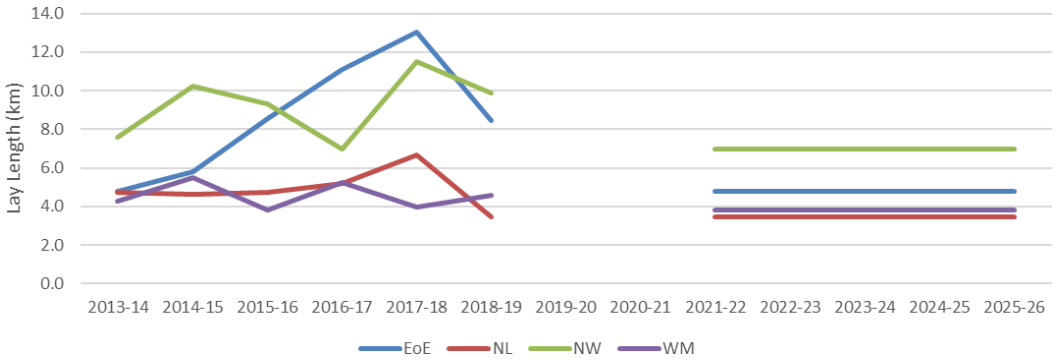

Figure 4: Minimum Approach to Forecasting Chargeable Diversions

Using the minimum year to forecast diversions gives an investment length of 19km per annum. This has a net cost of (once contributions are considered **XXXX** over RIIO-2. With this option, there is a risk that customers will fund more costs than necessary, unless every year in RIIO-2 exceeds the minimum year in RIIO-1. While this is certainly possible, there is still uncertainty about the level and profile of demand.

The resulting volumes and cost profiles are set out below.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	4.8	4.8	4.8	4.8	4.8	**24.1**
Lon	3.4	3.4	3.4	3.4	3.4	**17.2**
NW	7.0	7.0	7.0	7.0	7.0	**35.0**
WM	3.8	3.8	3.8	3.8	3.8	**19.0**
Total	**19.0**	**19.0**	**19.0**	**19.0**	**19.0**	**95.2**

Table 6: Volumes (km) for Option 3 (km)

Assuming a 93% customer contribution and an efficiency factor, the following table provides the total net repex required.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
Lon		Redacted due to commercial sensitivity				
NW						
WM						
Total						

Table 7: Cost profiles for Option 3 (£m)

7.4 Option 4: Conservative view based on minimum workload

This approach would see us use the 80% of the minimum length of diversion carried out in RIIO-1 to forecast RIIO-2 volumes and cost.

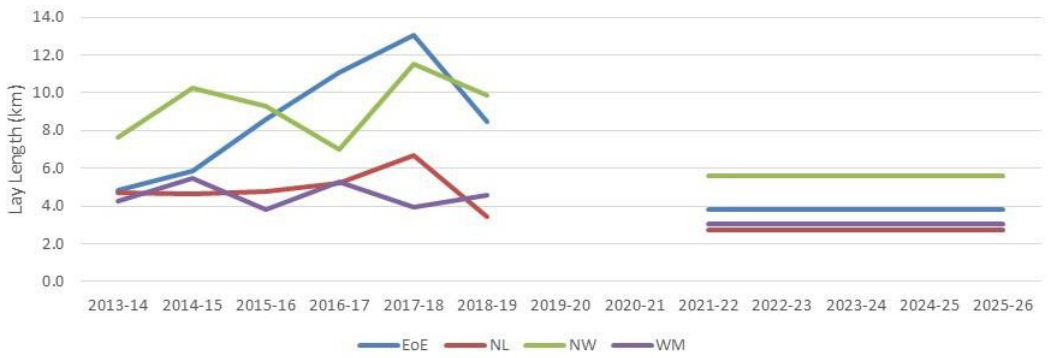

Figure 5: 80% of minimum Approach to Forecasting Chargeable Diversions

Using 80% of the minimum year to forecast diversions gives an investment length of 15.2km per annum. This has a net cost of (once contributions are considered) of **XXXX** over RIIO-2. This option is a very conservative view of workload compared with the other options, and therefore would better protect customers from funding unnecessary costs in the base plan. We have not seen investment at a level as low as this in recent years.

The resulting volumes and cost profiles are set out below.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	3.8	3.8	3.8	3.8	3.8	**19.2**
Lon	2.8	2.8	2.8	2.8	2.8	**13.8**
NW	5.6	5.6	5.6	5.6	5.6	**28.0**
WM	3.0	3.0	3.0	3.0	3.0	**15.2**
Total	**15.2**	**15.2**	**15.2**	**15.2**	**15.2**	**76.2**

Table 8: Volumes (km): Option 4

Assuming a 93% customer contribution and an efficiency factor, the following table provides the tot al net repex required.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
Lon						
NW						
WM						
Total						

Redacted due to commercial sensitivity

Table 9: Cost profiles for Option 4 (£m)

7.5 Options Technical Summary Table

As discussed previously for there is only one feasible technical solution available. For this reason, the following table will just summarise the options available for forecasting workload volumes.

	Option 1: Maximum Years	Option 2: Average Years	Option 3: Minimum Years	Option 4: 80% of Min Years
Chosen option (only technical feasible solution)	Diversion of existing asset	Diversion of existing asset	Diversion of existing asset	Diversion of existing asset
First year of spend	2021	2021	2021	2021
Last year of spend	2026	2026	2026	2026
Volume of interventions (Per annum)	37km	27km	19km	15km
Design life	45 years	45 years	45 years	45 years
Total spend request (net-repex) (RIIO-2 Total)		Redacted due to commercial sensitivity		

Table 10: Technical Summary Table

The repex quoted above includes the 93% customer contributions and is post-efficiency.

7.6 Options Cost Summary Table

The following table summarises all four options. These are net repex (including 93% customer contribution) and post-efficiency.

Year	Option 1: Maximum Years	Option 2: Average Years	Option 3: Minimum Years	Option 4: 80% of Min Years
2021/22				
2022/23				
2023/24		Redacted due to commercial sensitivity		
2024/25				
2025/26				
Total				

Table 11: Options Cost Summary Table

The confidence grade given to these estimates are ±5%. Although we have a high degree of confidence in the data used to generate the forecast (including RIIO-1 RRP data), the volume of work will ultimately depend on third-party development activity.

Deriving unit costs for Diversions (chargeable)

To convert the forecast workload into a cost estimate, we used the average unit costs for each diameter band from RIIO-1 (using RRP data for each diameter band, uplifted to a consistent 2018/19 price base). Costs in 2013/14 and 2014/15 were excluded from the analysis as the costs across all diameters had been smoothed in the RRP reporting. This is a reasonable approximation of the likely unit costs in RIIO-2 because this is the actual cost of carrying out the work in RIIO-1. The unit costs quoted below do not include any efficiency factors.

The table below sets out the average unit costs for each diameter band.

Pipe Size	EoE	Lon	NW	WM
Less Equal to 75mm				
Greater than 75mm to 125mm				
Greater than 125mm to 180mm				
Greater than 180mm to 250mm	Redacted due to commercial sensitivity			
Greater than 250mm to 355mm				
Greater than 355mm to 500mm				
Greater than 500mm to 630mm				
Greater than 630mm				

Table 12: RIIO-1 Average Unit Costs (pre-efficiency)

Efficiency

Our RIIO-2 forecasts include ongoing efficiencies flowing from our transformation activities, including the updating and renewing of our contracting strategies. Our initiatives are outlined in Appendix 09.20 Resolving our benchmark performance gap. For repex activities, this seeks a 5% efficiency improvement by 2025/26 on the end of RIIO-1 cost efficiency levels.

Contributions from third parties

Most of the cost of chargeable diversions is recovered from third parties. There is some residual cost that is not recovered – typically, this reflects assets which would be due for replacement in the short term regardless of the diversion driver or where street work charges are not rechargeable to the developer.

To forecast the level of cost recovery (third party contributions) in RIIO-1, we calculated the average level of contribution across RIIO-1. This is calculated using both the reported contributions for years 1-6 and the forecast for years 7-8. Based on this analysis, the forecast recovery rate for all networks is 93%. This is a reasonable assumption for RIIO-2 because it matches the reported average over RIIO-1, using this long-time range also smooths out any differences between the year of spend and year of cost recovery.

8. Business Case Outline and Discussion

8.1. Key Business Case Drivers Description

This investment addresses customer driven chargeable diversions. The benefits of this investment will be that assets will not be left in locations that will pose risks to newly built buildings and therefore customers will be kept safe. If we were not to carry out this investment customers would be exposed to unacceptable safety risks or inconvenience.

8.2. Business Case Summary

We have not undertaken cost benefit analysis for this investment as over 90% of the cost is typically recovered from third parties and we are obliged to undertake this work in order to ensure that our assets are protected. As such, we have not quantified the value of benefits for this case.

As discussed in Section 7, we have assessed a number of methods of establishing a reasonable minimum diversions-volume for our base plan. These are summarised below.

	Option 1: Maximum Year	Option 2: Average Year	Option 3: Minimum Year	Option 4: 80% of Minimum Year *(Chosen)*
Chosen option (only technical feasible solution)	Diversion of existing asset	Diversion of existing asset	Diversion of existing asset	Diversion of existing asset
Volume of interventions (Per annum)	37km	27km	19km	15km
Total spend request (net-repex) (RIIO-2 Total)		Redacted due to commercial sensitivity		

Table 13: Business Case Summary

To protect customers from funding unnecessary costs, **it is prudent to include in the base plan only the minimum workload that can reasonably be expected**. Accordingly, our plan includes a workload equivalent to 80% of the minimum year in RIIO-1. We have selected 80% because it provides a baseline that we can be confident will almost certainly be required, ensuring customers won't be impacted through over payment. **Our chosen option is therefore, Option 4.** This option is only viable with an associated Uncertainty Mechanism (UM) which allows for additional work above this minimum to be funded (see Appendix 10.12 Diversions and section 9.3 below). This UM is designed to protect customers and the business against volatility in workloads.

We note that the options for undertaking diversion work are also **assessed for each specific case** (on a case-by-case basis) always looking at the best cost options first. These options include (1) abandoning the pipe rather than diverting it; and (2) finding the cheapest route for the diversion. As the assessment occurs on a case-by-case basis, it is not viable to undertake this analysis ahead of time. In addition, the customer driving the work has the opportunity to review the selected option and may choose to either accept or to challenge all/part of the proposed option.

9. Preferred Option Scope and Project Plan

9.1. Preferred Option

Our preferred option is option 4.

Due to the uncertainty surrounding the scale and location of new development and construction activity within our network areas, our preferred option (at a programme level) is to include in the base plan only the *minimum workload* that can reasonably be expected (80% of minimum year in RIIO-1), along with an uncertainty mechanism to address workload in excess of this minimum level. Using RIIO-1 average costs and a contribution/recovery rate of 93%, this is equivalent to **XXXX**.

In conjunction with this approach, **we are also proposing an uncertainty mechanism**. The uncertainty mechanism (described in Appendix 10.12 Diversions) is designed protect customers, and the business, against volatility in workloads. As discussed, we are open to working with Ofgem on how best to manage this uncertainty.

9.2 Asset Health Spend Profile

Based on the forecast (minimum) workloads and contributions, the net spend profile for chargeable diversions is set out in the table below. In calculating the annual expenditure, the distribution of workload across the diameter bands is assumed to be the same as for RIIO-1.

Network	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
Lon			Redacted due to commercia			
NW			sensitivity			
WM						
Total						

Table 14: Net repex spend after contributions (£m)

9.3. Investment Risk Discussion

We must undertake diversions works which are triggered by customer demand. Our obligations to undertake this work stem from the Pipeline Safety Regulations.

Whilst we have knowledge of some of the interventions that will be required in RIIO-2, there is considerable uncertainty over the total volume and cost of interventions as they are dependent on third party activity that is outside our control. In deriving our RIIO-2 estimates we have therefore needed to make the following material assumptions:

- The workload forecast will continue to have similar complexity and scope as seen in RIIO-1, i.e. similar level of street works, traffic management and third-party stakeholder management; and
- Cost recovery will be at the same rate as for RIIO-1.

Given this uncertainty, and the fact that we are proposing to include only the minimum level of work in our base plan, we are proposing a reopener uncertainty mechanism. This mechanism would allow us to make a submission to Ofgem once a materiality threshold has been breached. The assessment of

materiality is conducted at the individual network, rather than Cadent level. In this submission, we would propose the costs we intend to recover from customers, providing evidence on why they are appropriate and efficient. For chargeable diversions, this submission would only cover net costs, accounting for customer contributions. As outlined in Appendix 10.12 Diversions, we consider this type mechanism to be the most appropriate – although mains diversion costs are well understood there can be special factors which can elevate costs, there are also uncertainties associated with moving non-pipeline assets such as governors.

We also note that the assumptions in this investment case are based on the scenario where the future demand for gas continues, and there is no sudden change to alternative fuel supplies in the short term. However, in our view, a significant reduction in gas-demand would not materially impact the investment in chargeable pipeline diversions –existing pipeline assets would still require protecting even if gas-demand was lower.

Reference	Risk Description	Impact	Likelihood	Mitigation /Control
09.25 - 001	Supply & Demand deliverability risk of Resource availability within the Gas industry	Potential cost increases in labour / commodity markets as demand is greater than supply	Low	Intelligent procurement and market testing. Apprenticeship and Training programmes to fill skills gaps
09.25 - 002	Stretching efficiency targets may not be deliverable (unit costs increase)	Outturn costs are not met increasing overall programme costs.	Low	Established market place - ability to manage the known commodity market
09.25 - 003	Unforeseen outages and failures restrict access for planned work	Programme and delivery slippage due to delay of planned outages and or site access	Low	Proactive asset management with ongoing condition surveys and response plans to prevent failures
09.25 - 004	Unseasonal weather in 'shoulder months', Autumn and Spring reduce site access/outage windows	Increased demands affecting access to sites and planned outages delay and cost increases	Low	Controlled forecasting and maintenance of flexibility to react to unforeseen events. Detailed design solutions to minimise outages and reduce exposure.

Reference	Risk Description	Impact	Likelihood	Mitigation /Control
09.25 - 005	Legislative change - There is a risk that legislative change will impact the delivery of our work.	Potential increase in the amount of consultation and information exchange required and require us to align our plans with the safety management processes operated by 3rd Party landowner / asset owners. The potential impact is more engagement and slower delivery	Med	We have established management teams to address these issues. We have also identified UMs for key areas.

Table 15: Risk Register

10 Regulatory Treatment

Cost variance for low materiality projects such as this will be managed through the Totex Incentive Mechanism (TIM). Increases in volume will be covered by the uncertainty mechanism set out in 10.12.

This investment is accounted for in the Business Plan Data Tables 4.05 Repex Diversions across the Rechargeable Diversions Sub Table.