Cadent

Your Gas Network

Appendix 09.24 Mains Diversions Non-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 haven't prepared a Cost Benefit Analysis as this work is mandatory and driven by customer demand. A brief overview is provided below.

Overview

Where third party activity occurs over or adjacent to gas mains or other network assets, we may need to divert or relocate those assets, to minimise the risk of damage, to ensure that the assets can be safely operated and maintained in future and that they do not present a hazard to new development. This work is customer driven and mandatory in order to meet our obligations under the Pipeline Safety Regulations, 1996.

In some circumstances this work is funded by the third party delivering the new project, but in other cases we do not have adequate legal rights (for example where a third part has the legal rights to ask us to move an asset) to charge for the diversion (or the diversion is required due to changes in the natural environmental). This investment case only covers non-chargeable work.

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 a programme level, we have assessed the overall volume and cost of non-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 degree of 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. 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)	
RIIO-2 Expenditure	**XXXX**
RIIO-2 Length	**2.10 km**

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2. Introduction

This document sets out our proposals for the diversion of pipelines driven by environmental effects or the activity of third parties. Where third party activity occurs over or adjacent to gas mains, we may need to divert or relocate those mains to minimise the risk of damage, to ensure that the assets can be safely operated and maintained in future and that they do not present a hazard to the new development. This work is customer driven and mandatory in order to meet our obligations under the Pipeline Safety Regulations, 1996.

In some circumstances this work is funded by the third party delivering the new project (see 09.25, chargeable diversions). This investment case deals with circumstances where the costs associated with the diversion are **not chargeable to the third party**. Specifically, the investment requirements covered in this document are related to 7 Cadent investment lines 43a to 43g (Non-Chargeable Mains Diversions Below 7 Bar). This includes;

- diversion works triggered by the customer that consist of addressing issues related to past built overs (including Built Over Services) or easement disputes;
- environmental changes such as reduce depth of cover, river bank/bed erosion or other factors impacting pipe integrity;
- lift and shift clauses where we must move our pipeline at our own cost; and
- the necessary legal work to support these activities associated with Land & Business Services (L&BS) costs.

These projects share a common theme that we do not have adequate legal rights to charge for the diversion (or that the diversion is mandated by natural environmental changes), this may be as the result of historic failures in developing legal agreements or deliberate choices made at the time of construction to accept future liabilities.

There is some degree of uncertainty associated with the volumes and complexity 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 is the best approach to protect customers from funding unnecessary costs.

This investment is on our below 7 bar network. These pipelines and services are often close to customers properties. Non-chargeable diversions on these pipelines are generally lower cost than for higher pressure pipelines.

This document **excludes** the investment for Cadent chargeable diversions which are covered in lines ‘45 Mains Diversions <7bar (Chargeable)’ and ‘46 Pipeline Diversions >7bar (Chargeable)’. The former is covered in Appendix 09.25, the latter has XXXX. Mandatory diversions associated with complex national infrastructure projects (HS2, Heathrow Expansion, Lower Thames Crossing) are also covered separately within the ‘Major Projects’ investment lines (Cadent reference lines 84-87).

3. Equipment Summary

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

	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 in Cadent

Although mains diversion is the most common area covered by this investment paper, we may also be required to relocate other assets such as governors, valves, cathodic protection installations or crossings.

4. Problem Statement

We have a responsibility under the Pipeline Safety Regulations (PSR, 1996) to ensure we have access to our pipes in order to examine them and to safely carry out maintenance work. Where third party infrastructure work 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 (for example, negotiated settlement to create utility corridors) are not feasible.

There are a number of different types of diversion. This document covers non-chargeable diversions only.

The following list sets out the most frequent scenarios where we may need to undertake non-chargeable diversion:

- Gas pipes have been built-over without permission where the customer has no legal obligation to fund the diversion (historic build over)
- Gas pipes are near other infrastructure or buildings which might limit our ability to manage and maintain our assets quickly and safely (historic encroachment)
- We have no right of access via easements or other licenses onto land (a result of historic weakness in legal arrangements)
- A customer has legally binding rights that require Cadent to move the asset from the customers' property (we have historically accepted 'lift and shift' clauses as part of negotiating new pipeline routes in order to secure access)
- The integrity of the asset has been compromised due to changes in its surrounding environment; this could be a river changing its course or a landslip adding extra load. In this case the health of the asset may be good but the change in its surroundings compromises its ability to operate.

If it can be shown that the landowner failed to contact Cadent Gas at the time a diversion was required, then it may be possible to take legal action to recover costs. Where this is the case, we assess the possibility and chances of a successful legal challenge to win a case and to recover costs. If the cost of diversion is less than XXXX and the customer is a domestic customer, we generally do not pursue legal action as the cost of action is typically greater than delivering the work. For other more expensive diversions a legal challenge may be a viable option.

Regardless of whether a legal challenge is viable or not, we must undertake this work to meet our obligations under the Pipeline Safety Regulations. If we do not carry out the required work, in addition to breaching our responsibilities under the Regulations, there is a risk that our pipelines and infrastructure will be damaged and that we are unable safely, quickly and cost-effectively operate and maintain our pipeline-assets, or secure supply in the event of an emergency. The pipe will also often present an immediate hazard to buildings which have encroached around or over it.

4.1. Narrative Real-life Example of Problem

The below example is of a 'lift and shift' request made by Network Rail where the gas asset crossed the lines of the railway (in a footbridge).

In this case Network rail have the rights to demand that we remove and relocate our asset (2" steel low pressure main) to allow them to carry out nessesary works on their property. In this instance they have given 12 months notice (in accordance with their licence) in which Cadent must have completed the relocation of the relevant pipelines.

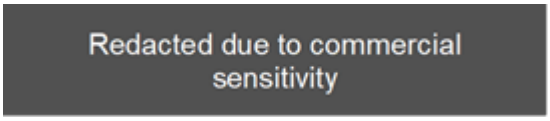


Figure 1: Network Rail Diversion Example

At the time of the pipes installation, the footbridge would have represented a low-cost route to achieve a pipe crossing of the railway (alternatives such as tunnelling or a longer route would have been more expensive). The rail network operator would have been in a strong position to negotiate terms of the contract because they would know that the gas network company would incur much larger costs if another route had to be found. The gas network operator would also be keen to secure a deal to allow a lower cost job to be delivered. As such a contract was entered into which puts the gas network owner at a considerable disadvantage – the gas pipe has to be moved at the desire of the rail operator.

When a request of this nature is received analysis will be undertaken to identify how gas supplies can be maintained. Since the pipe was originally installed, gas demand may have changed and the area around the pipe may also have altered (new housing estates, demolished factories, new roads, etc.). It is possible that, with some reconfiguration, the pipeline can be abandoned or that, given changes to demand and geography, a new route can be found. However, in other circumstances it is necessary to re-lay the pipe by another route – this may be the expensive route that the original gas engineers chose to avoid by entering into a one-sided contract with the rail operator.

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
- Purchasing land parcels
- Improving pipeline easements (legal work)
- Legal challenge to recover the costs from the customer

The diversion works incudes all investment to divert <7bar mains gas pipes and associated assets where costs cannot be recovered.

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.

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 section 7: options considered).

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. This will result in the meter installation and internal pipework not being able to be isolated by the customer. The service pipework may also 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 and 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 not chargeable to customers.

The nature of non-chargeable diversions is that they are reactive, driven by the actions of customers or the environment. It is therefore difficult to accurately predict the volumes and complexity of work required in future years.

Non-chargeable diversions investment is to remove the risk from a gas asset which are beneath/in close proximity to a building or impacted by environmental change. 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 non-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. 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.

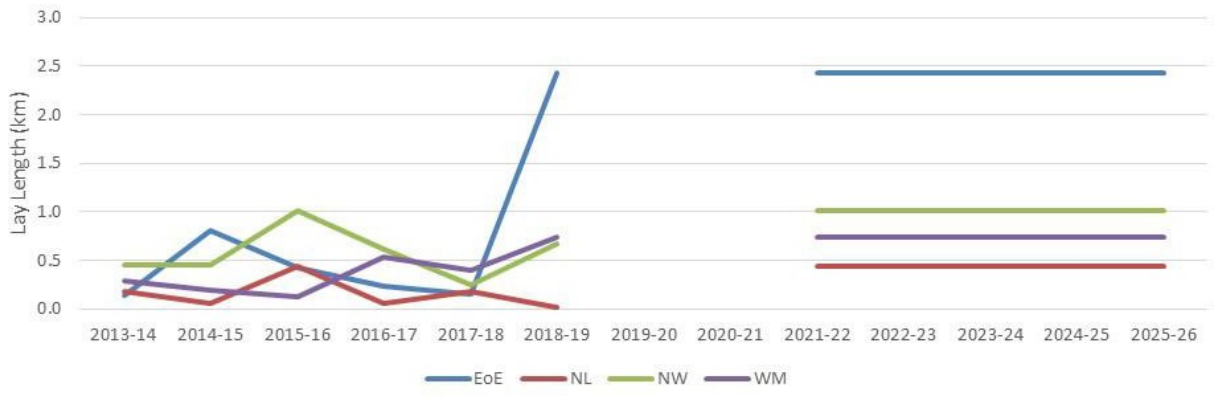


Figure 2: Max Approach to Forecasting Chargeable Diversions

Using the maximum year to forecast diversions gives an investment length of 4.6km per annum. This has a net cost of 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 option would be appropriate if we estimate that work volumes will increase into the future.

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	2.43	2.43	2.43	2.43	2.43	**12.14**
NL	0.44	0.44	0.44	0.44	0.44	**2.20**
NW	1.02	1.02	1.02	1.02	1.02	**5.08**
WM	0.74	0.74	0.74	0.74	0.74	**3.70**
Total	**4.62**	**4.62**	**4.62**	**4.62**	**4.62**	**23.12**

Table 2: Volumes for Option 1 (km)

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

Table 3: Cost profiles 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.

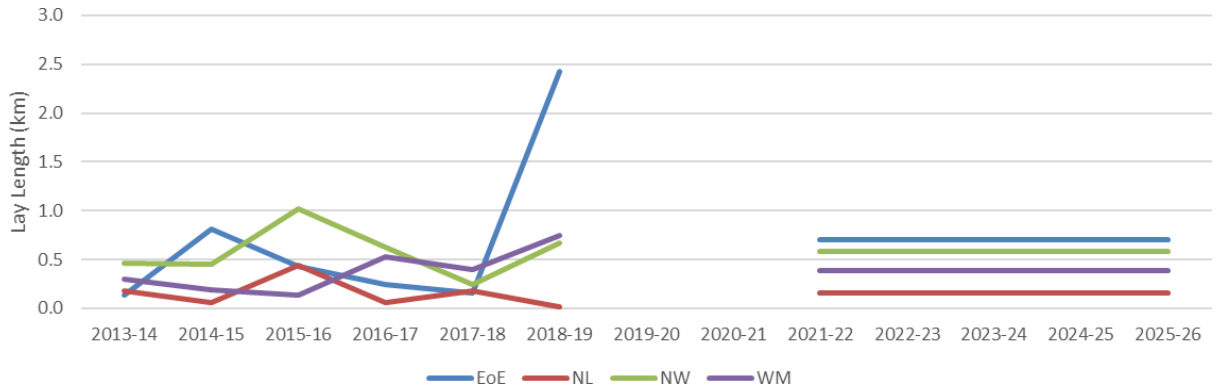


Figure 3: Average Approach to Forecasting Chargeable Diversions

Using the average year to forecast diversions gives an investment length of 1.8km per annum. This has a net cost of 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.

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	0.70	0.70	0.70	0.70	0.70	**3.49**
NL	0.16	0.16	0.16	0.16	0.16	**0.78**
NW	0.58	0.58	0.58	0.58	0.58	**2.89**
WM	0.38	0.38	0.38	0.38	0.38	**1.90**
Total	**1.81**	**1.81**	**1.81**	**1.81**	**1.81**	**9.06**

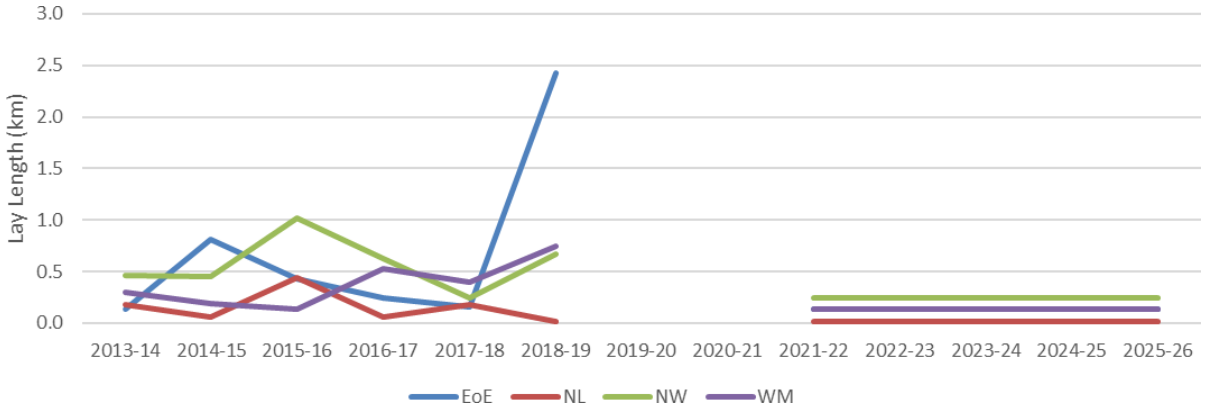
Table 4: Volumes for Option 2 (km)

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

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.



Note: the EoE line (blue) coincides with the WM line (purple)

Figure 4: Average Approach to Forecasting Chargeable Diversions

Using the minimum year to forecast diversions gives an investment length of 0.5km per annum. This has a net cost of 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 considerable uncertainty about the level and profile of demand.

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	0.13	0.13	0.13	0.13	0.13	**0.67**
NL	0.02	0.02	0.02	0.02	0.02	**0.09**
NW	0.24	0.24	0.24	0.24	0.24	**1.21**
WM	0.13	0.13	0.13	0.13	0.13	**0.66**
Total	**0.53**	**0.53**	**0.53**	**0.53**	**0.53**	**2.63**

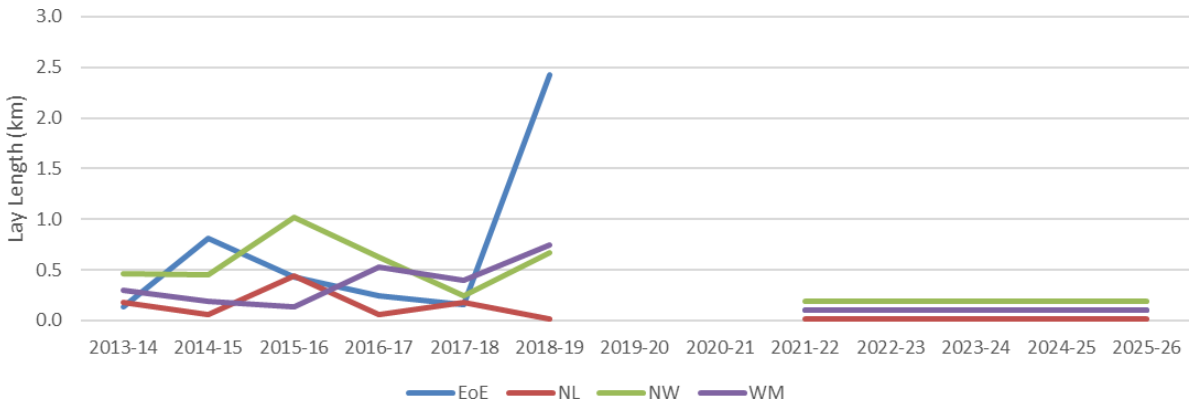
Table 6: Volumes (km) for Option 3 (km)

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE						
NL						
NW		Redacted due to commercial sensitivity				
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.



Note: the EoE line (blue) coincides with the WM line (purple)

Figure 5: Average Approach to Forecasting Chargeable Diversions

Using 80% of the minimum year to forecast diversions gives an investment length of 0.4km per annum. This has a net cost of XXXX over RIIO-2. This option is a more conservative view of workload compared with the other options and therefore, would better protect customers from funding unnecessary costs in the base plan.

	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EoE	0.11	0.11	0.11	0.11	0.11	**0.53**
NL	0.01	0.01	0.01	0.01	0.01	**0.07**
NW	0.19	0.19	0.19	0.19	0.19	**0.97**
WM	0.11	0.11	0.11	0.11	0.11	**0.53**
Total	**0.42**	**0.42**	**0.42**	**0.42**	**0.42**	**2.10**

Table 8: Volumes (km): Option 4

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

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

7.5 Options Technical Summary Table

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

	Maximum Year	Average Year	Minimum Year	80% of Minimum Year
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)	4.6km	1.8km	0.5km	0.4km
Design life	45 years	45 years	45 years	45 years
Total spend request (repex) (RIIO-2 Total)	Redacted due to commercial sensitivity			

Table 10: Technical Summary Table

7.6 Options Cost Summary Table

The following table summarises all four options.

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

Table 11: Options Cost Summary Table

Deriving unit costs for Diversions

The table below sets out the average unit costs for each diameter band. We note that there are some unit costs which look very high compared to other networks or to neighbouring diameter bands. This is the case for diameter bands where there was only a very small amount of activity in RIIO-1 and hence a short total length (leading to high unit costs). We have left these costs in, noting that the overall output is not overly sensitive to this because only a very small proportion of costs in RIIO-2 rely on these diameter bands (the distribution of workload across the diameter bands is assumed to be the same as for RIIO-1). Notwithstanding, we note that our approach is to tender work to ensure efficiency as there is potential for atypical spend for any given project.

	EoE	NL	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

In addition to pipeline expenditure we will also encounter costs for relocation of other network assets. These costs are more variable and will be dealt with through the proposed Uncertainty Mechanism (UM) for diversions.

Efficiency

Our RIIO-2 forecasts include ongoing efficiencies flowing from our transformation activities, include from 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

For non-chargeable diversions there are no contributions from third parties.

8. Business Case Outline and Discussion

8.1. Key Business Case Drivers Description

This investment addresses customer or environmentally-driven non-chargeable diversions. If we were not to carry out this investment, customers would be exposed to unacceptable safety risks or inconvenience which could lead to legal procedures. The benefits from 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.

8.2. Business Case Summary

We have not undertaken cost benefit analysis for this investment as we are obliged to undertake this work in order to ensure that our assets are protected in accordance with the Pipeline Safety Regulations or in response to legal contracts with third parties. 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)	4.6km	1.8km	0.5km	0.4km
Total spend request (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.**

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 investment options. These project options include (1) abandoning the pipe rather than diverting it; and (2) finding the cheapest route for the diversion. However, as this assessment occurs on a case-by-case basis, it is not viable to undertake the analysis ahead of time.

In conjunction with this approach, **we are also proposing an uncertainty mechanism (UM)**. The uncertainty mechanism (described in section 9.3 below & Appendix 10.12 Diversions) is designed to

protect customers and the business, against volatility in workloads. The presence of the UM allows the reduction in base spend put forward in this investment case.

9. Preferred Option Scope and Project Plan

9.1. Preferred Option

Our preferred option is Option 4.

Due to the uncertainty surrounding the scale of non-chargeable diversions, our preferred option (at a programme level) is to include in the base plan only the *minimum workload* that can reasonably be expected, along with an uncertainty mechanism to address workload in excess of this minimum level. Using 80% of RIIO-1 minimum lengths and average costs as reported in the RRP, this is equivalent to XXXX.

In conjunction with this approach, **we are also proposing an uncertainty mechanism**. The uncertainty mechanism (described in section 9.3 below) 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.

These two elements, working together, protect customers and the company.

9.2. Asset Health Spend Profile

The table below sets out the annual expenditure and contributions for this investment case, by network.

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

Table 14: Repex Spend (£m)

9.3. Investment Risk Discussion

We must undertake diversion works which are triggered by customer demand and cannot be charged. These works typically arise from issues relating to build overs, easement disputes and lift and shift agreements. Our obligation to undertake this work stems from the Gas Pipeline Safety Regulations.

Whilst we have knowledge of some existing interventions required in RIIO-2, there is considerable uncertainty over the total cost of intervention, given that interventions are typically triggered by factors outside our control. In deriving our RIIO-2 estimates we have therefore needed to make the following material assumptions:

- That the number and type of interventions in RIIO-1 will be similar in RIIO-2.
- The unit costs for interventions at different diameter bands will remain unchanged.

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 an 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 non-chargeable diversions, this submission would cover all relevant costs incurred.

As outlined in Appendix 10.12 Diversions, we consider this to be the most appropriate type of mechanism given the drivers of uncertainty relate to both the volume of work required *and* the costs associated with individual diversion projects, specifically non-pipeline diversions.

Separately, we note that the assumptions in this investment case are also 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 non-chargeable pipeline diversions –existing pipeline assets would still require protecting even if gas-demand was lower.

Reference	Risk Description	Impact	Likelihood	Mitigation /Control
09.24 - 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
09.24 - 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
09.24 - 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
09.24 - 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.
09.24 - 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

9.4 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 Table 4.05 Repex diversions, across the non-chargeable diversions sub-table.