

Engineering Justification Paper: EJP07

Mains Diversions (Chargeable & Non-Chargeable)



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1 Summary Table

Name of Project	Pipeline diversions; chargeable / non-chargeable		
Scheme Reference	Pipeline diversions below 7 bar		
Primary Investment Driver	Safety, Regulatory compliance with Pipeline Safety Regulations		
Project Initiation Year	2026		
Project Close Out Year	2031		
Total Installed Cost Estimate (£)	[Cost Data]		
Cost Estimate Accuracy (%)	+ /-5 %		
Project Spend to date (£)	0		
Current Project Stage Gate	Not applicable		
Reporting Table Ref	CV6.06		
Outputs included in RIIO-2 Business Plan	Yes		
Spend apportionment	RIIO-2	RIIO-3	RIIO-4
	[Cost Data]	[Cost Data]	[Cost Data]
Proposed regulatory treatment for RIIO-3 work plan	In base expenditure		

This investment case does not satisfy the criteria for late competition or early competition and pursuing these activities would not be in the interests of the customer. We recognise the benefits that competition can bring to customers through efficiency and innovation. We continue to challenge ourselves as a business to ensure that we are harnessing competitive forces where they can provide these benefits. For specific detail on how we have assessed competition we have written a workforce and supply chain appendix, [Appendix 17](#), see Chapter 6.

All prices contained within this paper are in 2023/24 prices and pre-efficiency, unless stated otherwise.

2 Executive Summary

Where third-party activity occurs over or adjacent to gas mains, we may need to divert or relocate the asset to minimise the risk of damage, ensure safe ongoing operation and maintenance, and mitigate risk to the new development. As of 2023/24 there are approximately 127,000 km of mains across our network.

This work acts to ensure our obligations under the Pipeline Safety Regulations 1996, the New Roads and Street Work Act 1991 continue to be met. Similarly, diversions ensure we meet duties under easements, such as lift and shift clauses, and legal documentations such as protective provisions for Development Consent Orders and Transport and Works Act Orders.

In RIIO-2 we took a cautious approach to projecting future diversion expenditure but in practice, our expenditure has been significantly greater. We have assumed the level of RIIO-3 expenditure will be consistent with RIIO-2, as summarised below in Table 2.

[Commercially Sensitive Information Redacted]

Table 1: RIIO-2 and RIIO3 summary: Diversions below 7 bar

We have removed built over mains from our non-chargeable diversions forecast workload assumptions. These built over mains vary significantly in complexity and carry a degree of cost uncertainty until each unique project is designed and the built over asset confirmed. These projects and their associated costs will be dealt with by the Ofgem directed Diversions reopener in RIIO-3 (UM.A.4).

We forecast based on historic workloads, but it is difficult to be completely certain of customer driven works, and we see variances in terms of volume, complexities and level of risk. As the works are required for continued legislative compliance and we are not yet able to fully articulate the risk and benefits, we have not considered multiple options or scenarios, nor produced a Cost Benefit Analysis (CBA) as agreed with the Ofgem Engineering team through our engagement sessions in June and September.

3 Introduction

Pipeline diversions are driven from the need to manage risk to pipeline integrity of below 7 bar mains because a third party has located a structure over or adjacent to it, resulting in the need to relocate the gas pipeline, through a request to divert the pipeline to enable a new development (customer-driven), or as a result of historic legal agreements. This work is primarily third party driven and allows us to:

- Facilitate safe working in the vicinity of our assets by third parties
- Comply with legislative requirements set out in the New Roads and Street Works Act 1991¹ where gas apparatus in a street is, or may be, affected by major highway works, major bridge works, or major transport works
- Meet duties under easements, such as lift and shift clauses, and legal documentations, such as protective provisions for Development Consent Orders and Transport and Works Act Orders
- Ensure that a main or pipeline remains accessible for repair and maintenance duties and that it is maintained in an efficient state, proper working order and in good repair to meet the legislative requirements of The Pipelines Safety Regulations 1996²

Whilst we can forecast based on an average number of diversions received per year, it is difficult to be completely certain as these are customer driven works, and we see variances both in terms of volume and complexities.

For this reason, we have used our RIIO-2 historic work volumes and costs to forecast a likely future volume and investment need for chargeable and non-chargeable diversions for RIIO-3. As agreed with Ofgem through our engagement sessions, we have not attempted to justify this investment using a CBA, because this work is driven by legislation and is external driven so cannot be predicted with any certainty.

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¹ New Roads and Street Works Act 1991

² The Pipelines Safety Regulations 1996

4 Equipment Summary

We have used this section to summarise the total length of below 7 bar mains across Cadent's network, to provide context to the number of diversions being forecast.

As of 2023/24 there are 127,155 km of mains across Cadent's network. This is summarised by material for each network in the table below.

	EE	Lon	NW	WM
PE (Km)	40,562	15,395	27,298	18,016
Steel (Km)	2,906	884	1,274	1,488
Iron (Km)	6,320	4,165	4,739	4,055
Other (Km)	2	-	50	0
Total (Km)	49,791	20,445	33,361	23,559

Table 2: Length of below 7 bar mains by Cadent network. As RRP 2023/24

This investment is not triggered by asset health, but by obligations described in **Section 5**. Therefore, we are not able to declare a condition score at the start and end of RIIO-3. There has been no spend associated with the diversion works within the scope of this paper.

In RIIO-2 we took a cautious approach to projecting future diversion expenditure, we assumed future expenditure would not exceed 80% of the minimum annual historic expenditure. In practice, our expenditure has been significantly greater than this level. Recognising this fact, we have assumed the level of RIIO-3 expenditure will be consistent with RIIO-2. This is shown in Table 1 in **Section 2**.

5 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. In some circumstances this work is funded by the third party, this is referred to as a 'chargeable diversion'. 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.

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.

In other circumstances we may not be able to recover the costs of the diversion-work but must divert to meet our obligations under the Pipeline Safety Regulations; these are non-chargeable (to the third party).

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 us 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

Successful investment in RIIO-3 will focus on maintaining and enhancing the overall asset health across our pipelines by strategically diverting pipelines which are exposed to either intolerable integrity or commercial risk.

5.1 What happens if we do nothing

Diversions are typically chosen as a last resort when other more cost-effective solutions are not feasible, and each intervention is assessed on case-by-case basis.

The consequence of inaction will vary dependent upon risk that has triggered the diversion project and the site-specific conditions that the pipeline is exposed to. However, in general we not addressing the risks has the potential to adversely affect the integrity of the pipework and our ability to properly maintain it either by exposing the pipeline increased the risk of damage and interference, or by limiting accessibility to the pipeline. This would increase the risk of asset failure and therefore affect reliability of our supply, as well as potentially cause harmful environmental emissions. It would also result in potential breaches of our duties under the Pipeline Safety Regulations (Regulation 13). The consequences of a failure are outlined in [Section 7](#).

Depending upon circumstances we may also be in breach of our legislative requirements under the New Roads and Street Works Act 1991 and the Pipelines Safety Regulations 1996; as well as not meeting our duties under easements, such as lift and shift clauses, and legal documentations, such as protective provisions for Development Consent Orders and Transport and Works Act Orders.

5.2 Key outcomes and understanding success

[Commercially Sensitive Information Redacted]

5.3 Narrative real-life example of problem

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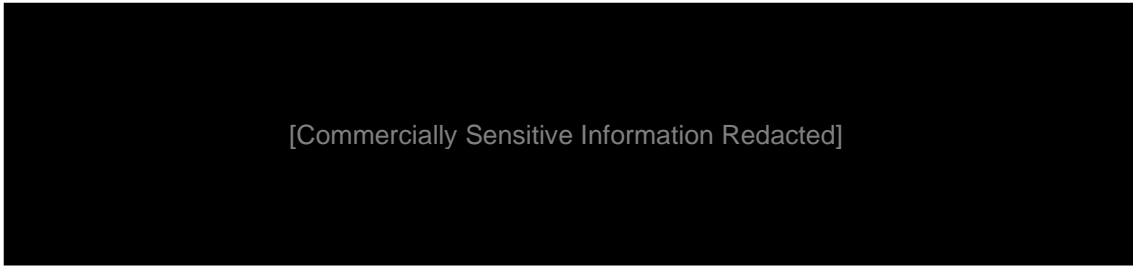


Figure 1: [Commercially Sensitive Information Redacted] preferred solution

5.4 Project Boundaries

[Commercially Sensitive Information Redacted]

6 Consequence of Failure

[Commercially Sensitive Information Redacted]

7 Options Considered

[Commercially Sensitive Information Redacted]

7.1 Option 1: Average workload across RIIO-1 and RIIO-2

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Table 3: Summary of chargeable and non-chargeable RIIO-3 cost estimates and workload volumes

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Table 4: Chargeable RIIO-3 work-volumes

[Commercially Sensitive Information Redacted]

Table 5: Net chargeable RIIO-3 diversion £m Repex

[Commercially Sensitive Information Redacted]

Table 6: Non-Chargeable diversions: RIIO-3 work-volumes

[Commercially Sensitive Information Redacted]

Table 7: Non-Chargeable diversions: RIIO-3 costs £m Repex

8 Business Case Outline and Discussion

This section is not used.

9 Preferred Option Scope and Project Plan

9.1 Preferred Option

[Commercially Sensitive Information Redacted]

9.2 Asset Health Spend Profile

[Commercially Sensitive Information Redacted]

[Commercially Sensitive Information Redacted]

Table 8: Non-chargeable diversions (below 7 bar pipelines): RIIO-3 Repex

[Commercially Sensitive Information Redacted]

Table 9: Chargeable diversions (below 7 bar pipelines): Net of 3rd party contributions: RIIO-3 Repex

9.3 Investment Risk Discussion

[Commercially Sensitive Information Redacted]

[Commercially Sensitive Information Redacted]

Table 10: Key business risks

9.4 Project Plan

[Commercially Sensitive Information Redacted]

9.5 Key Business Risks and Opportunities

[Commercially Sensitive Information Redacted]

9.6 Outputs included in RIIO-2 Plans

[Commercially Sensitive Information Redacted]

10 Regulatory Treatment

[Commercially Sensitive Information Redacted]

11 Glossary

Term	Definition
CBA	Cost Benefit Analysis
EJP	Engineering Justification Paper
FES	Future Energy Scenarios

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