

**Major Justification Paper: MJP07**

**Grays Medium Pressure**



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# 1 Summary table

Name of Project	North London Grays Medium Pressure		
Scheme Reference	MJP07		
Primary Investment Driver	Asset Health - Poor condition of the steel mains that are deteriorating at an increased rate.		
Project Initiation Year	26/27		
Project Close Out Year	30/31 (with a view to completing full programme by 33/34)		
Total Installed cost estimate (£)	Current view on total installed cost of the preferred option		
Cost Estimate accuracy (%)	+/-10%		
Project Spend to date (£)	[cost data]		
Current Project Stage Gate	Design		
Reporting Table Ref	6.01, 6.02, 6.05, 6.08,5.04		
Outputs included in RIIO-2 Business Plan	No, investment applied in period and not as part of the RIIO-2 business plan		
Spend apportionment (for RIIO-3 plan)	<b>RIIO-2</b>	<b>RIIO-3</b>	<b>RIIO-4</b>
	[cost data]	[cost data]	[cost data]

*Table 1: Summary Table for Grays Medium Pressure*

All costs in this paper are pre-efficiency and 23/24 price base.

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, please see Chapter 6 of the Workforce and Supply Chain Strategy ([Appendix 17](#)).

## 2 Executive Summary

Our customers want a safe and reliable service. We also have obligations under Pipeline Safety Regulations (1996) which mean we must act where pipes are in an unsuitable condition to transport gas. The Health & Safety Executive (HSE) mandates certain mains replacement work through an enforcement policy that sets the standard for a safe service and reflects society's appetite for risk.

Our investments for RIIO-3 are driven by customers' expectations, an absolute duty on safety and works towards a 1:20 ready network at a sustainable pace. We have taken a whole network approach to developing the plan, coordinating programmes of work across Repex and Capex using a modelled approach which allows us to maximise costs efficiency.

This paper covers investment in a specific area of Medium Pressure Steel in Grays, London. Grays Medium Pressure (GMP) pipes are a high leakage and complex section of our North London Network. Due to the pressure tier of these assets and the high volume of associated service governors the investment that is required is [cost data] more expensive than that needed for typical steel mains replacement.

In comparison to our wider London Network, the GMP region contains some of the riskiest pipes that are on our Mains Risk Priority System (MRPS). This is driven by the pressure tier and volume of leakage. Our proposed RIIO-3 programme of work for GMP is comprised of [sensitive data] of mains renewal and the replacement or transfer of associated services. Using the detailed costing model developed for RIIO-3, this will see us invest [cost data] in our networks.

Our investments in RIIO-3 will deliver the following benefits:

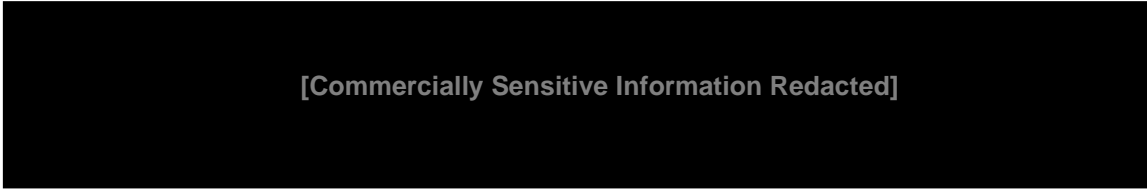
- Improved safety – reduce incident risk as calculated in the MRPS
- Reduced Opex – reduce mains failures, producing Opex savings for the customers
- Enhance reliability – reduce the probability of an interruption to supply
- Improved Carbon Abatement – reduce mains leakage, delivering environmental benefits

We have considered numerous options with a view to maximise value for customers both in terms of risk and expenditure:

- [sensitive data]
- [sensitive data]
- [sensitive data]
- [sensitive data]

## 3 Project Status and Request Summary

[Commercially Sensitive Information Redacted]



[Commercially Sensitive Information Redacted]

*Table 2: Project status to date*

[Commercially Sensitive Information Redacted]

## 4 Problem Opportunity Statement

Our customers expect a safe, secure, and reliable network. The GMP pipelines in our North London network carry a significant level of risk, further detail available in section 5.2. To minimise the risk to members of the public and reduce the cost of replacement a comprehensive programme is required to undertake this investment in a deliverable and efficient fashion.

The following section sets out:

- The background to GMP
- The drivers, problems, and opportunities
- The challenges with delivery
- Project timescales
- Related projects
- Project boundaries

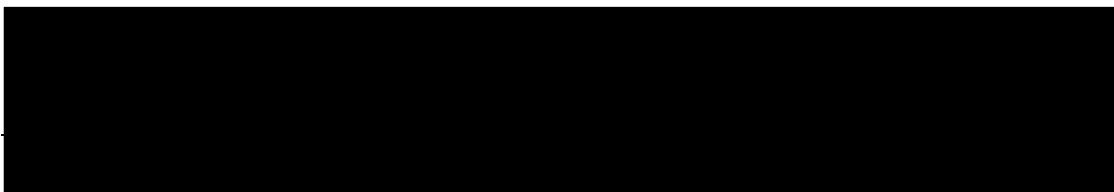
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### 4.1 Background to GMP

This paper outlines the options to deliver GMP works in RIIO-3 and the proposed options to achieve this.

The GMP network covers the boroughs of [sensitive data]. There is a total of approximately [sensitive data] of metallic mains within network. Around [sensitive data] of these are steel mains.

The network is deteriorating resulting in sustained high numbers of failures as shown in figure 1. Therefore, these mains require more repairs leading to disruption to residents, businesses, and tourists in critical parts of the nation's capital. The two tables below demonstrate the rate at which GMP steel is leaking in comparison to our wider steel medium pressure network across the rest of our geographical footprint.



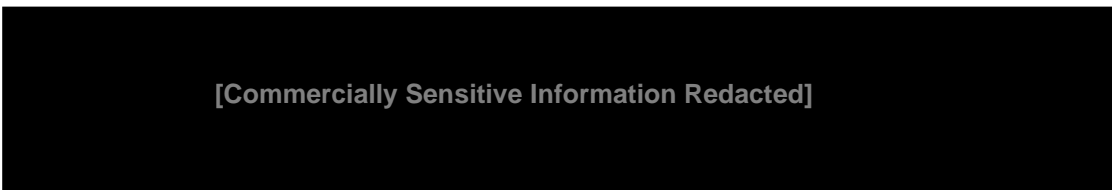
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*Table 3: Leaks comparison between grays MP and wider steel population*

[Commercially Sensitive Information Redacted]

*Table 4: Gas in building comparison between grays MP and wider steel population*

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*Figure 1: Gas in buildings per KM*

To mitigate these growing safety, customer and stakeholder risks, the GMP programme seeks to replace the network using a managed programme of interventions. We are targeting the highest risk pipes in the network using the pipeline above safety threshold (PAST) methodology (See section 5.2 for more details) making sure we are tackling the biggest safety risks for our customers,

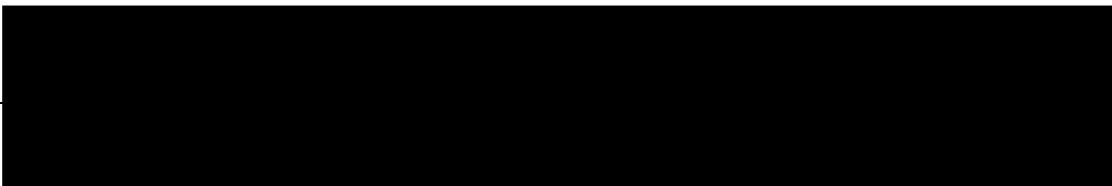
The assets we are seeking to replace in RIIO-3 are some of the highest leaking assets in the North London network. Funding for this programme of works would allow us to continue the replacement of these assets that we have started in RIIO-2.

The GMP programme of work, which started in RIIO-2, is part of a long-term programme to upgrade and replace strategic sections of the GMP network. The work will take place in sensitive locations within London and therefore it is important that we deliver the work in close consultation with stakeholders and with the least disruption to residents, workers, businesses, and tourists. We are currently delivering this work and although each individual scheme is unique, we expect that the RIIO-3 programme will be similar in complexity.

Because of our modelling and design processes we work in unison with our engineering teams to identify and build a targeted plan with assets that we have already identified under the scope of this MJR to drive efficiency. We will then review our entire Grays asset base through a dynamic review process on a monthly basis, the purpose of which is to identify assets that have deteriorated faster than the wider population and to prioritise them accordingly for replacement. This in practice will mean that although the overall Grays programme of works is designed upfront, we will prioritise and amend small sections of our plan to accommodate the replacement of higher risk assets.

## 4.2 Investment Driver, problems and opportunities

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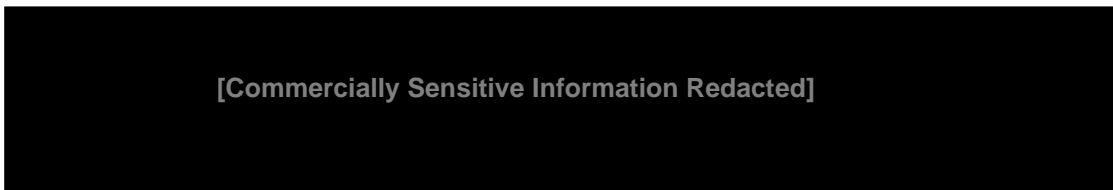
*Figure 2: NL T1 Iron vs Steel Failures Per KM*

Failure of our mains pose the following risks:

- Safety: a failure or leak on a gas pipeline poses a fire and explosion risk to the public. Almost all GMP pipes under consideration for intervention are within 30 metres of offices, homes, flats and shops. Managing a leak on a medium pressure pipeline also provides significant safety risks, both for customers and the operatives managing the leaks
- Environmental impact: a leak causes an environment impact through the release of gas to the atmosphere with the resulting impact on carbon emissions (greenhouse gas)
- Traffic disruption: a failure or leak on a gas pipeline will require the pipe to be isolated and roads and buildings to be closed / evacuated to enable the repair leading to extensive traffic disruption This would lead to significant potential business and societal impact
- Damage to buildings and critical national infrastructure: a leak could lead to fire and explosion and the risk of damage to adjacent buildings and infrastructure with the resulting financial impact
- Security & resilience: if a leak is identified, the response will be to isolate the affected pipe and repair. Most of our customers are directly fed by these mains and their associated services
- Financial: Cost of a reactive repair. The cost of responding to a failure or leak on a medium pressure pipe is markedly more expensive than that of a low pressure asset. Medium pressure pipelines typically require specialist flow stop operations to safely manage the flow of gas whilst repairs take place. These specialist flow stop operations often require the use of a 3<sup>rd</sup> party specialist to attend site

### 4.3 Real life example – Thundersley Park Road (Environmental)

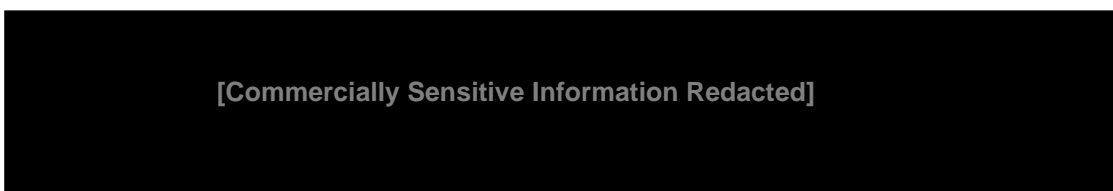
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*Table 5: Number of badger setts from badger report*

[Commercially Sensitive Information Redacted]



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Figure 3: Emissions by option

## 4.4 Key challenges

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### 4.4.1 Intervention differential

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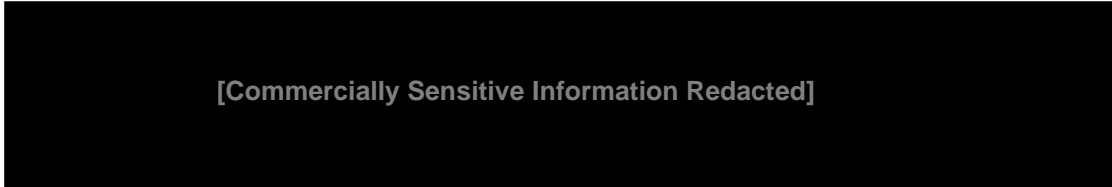


Figure 4: Cost base difference between standard mains replacement works in our North London network and GMP

## 4.5 Understanding project success

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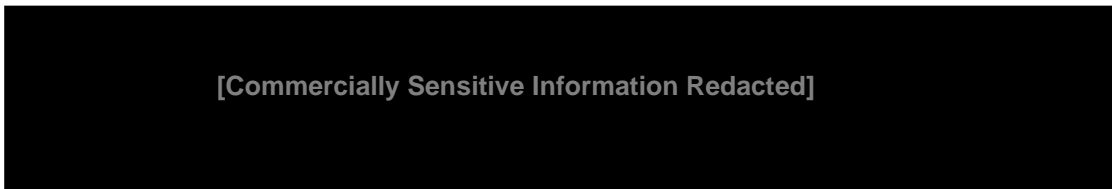


Figure 5: Failures reductions by option

## Related Projects

[Commercially Sensitive Information Redacted]

## 4.6 Other related activities

[Commercially Sensitive Information Redacted]

## 4.7 Project Boundaries

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# 5 Project Definition

## 5.1 Supply and Demand Scenario Discussion and Selection

Our license states that we must have a network that can meet 1 in 20 yr peak winter daily demand.

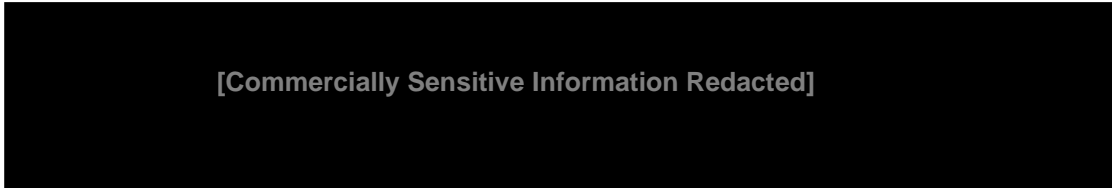
We have reviewed the appropriateness of the FES Holistic Transition pathway as our core supply-demand scenario. Due to the lack of local, specific data and reviewing our historic actual demands,

holistic transition is significantly under-estimating peak demand (1 in 20yr license obligation) and is therefore not a robust scenario for use in RIIO-3.

As such, our base-case supply demand scenario selected for this EJP / MJP, is the 5-year centralised Supply-Demand forecast which is developed with NESO taking actual demand and historic requirements from us into account. For 2030 to 32 this forecast has assumed a reduction in demand in relation to each networks forecasted volumes. For further information on our review of the FES future energy scenarios refer to the [Network Asset Management Strategy](#) (NAMS section 3.1).

## 5.2 Project Scope Summary

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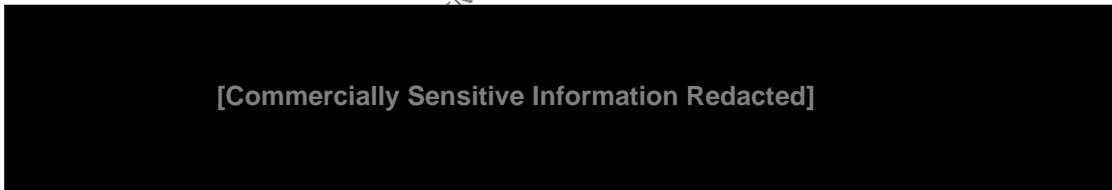


*Figure 6: Replacement prioritisation*

# 6 Options Considered

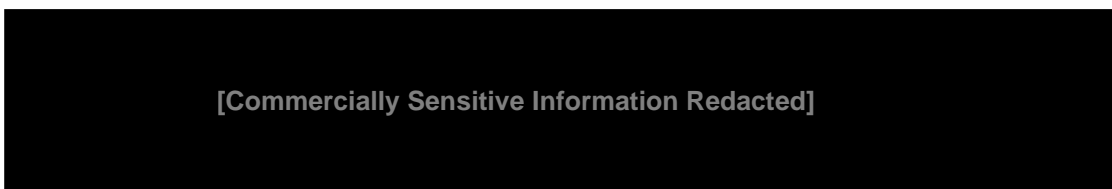
## 6.1 Intervention Options

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*Table 6: Intervention options*

## 6.2 Option 1: Do Nothing (baseline)



*Table 7: Option 1 – baseline*

### 6.3 Option 2: Partial Network replacement

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Table 8: Option 2 - partial replacement

### 6.4 Option 3: Full Network replacement

[Commercially Sensitive Information Redacted]

Table 9: Option 3 - full replacement

### 6.5 Option 4 Defer to future periods

[Commercially Sensitive Information Redacted]

Table 10: Option 4 - defer

### 6.6 Options Cost Summary table

[Commercially Sensitive Information Redacted]

Table 11: Options cost summary table

### 6.7 Options Cost Estimate Details

[Commercially Sensitive Information Redacted]

[Commercially Sensitive Information Redacted]

Table 12: partial replacement cost estimate



Table 13: Full replacement cost estimate

## 7 Business Case Outline and Discussion

### 7.1 Key Business Case Drivers Description

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### 7.2 Business Case Summary

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*Table 14: Key details for each option analysed*

### 7.2.1 Discussion of results

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### 7.3 Supply and Demand Scenario Sensitivities

[Commercially Sensitive Information Redacted]

[Commercially Sensitive Information Redacted]

*Table 15: Sensitivities table*

## 8 Preferred Option Scope and Project Plan

### 8.1 Preferred Option for this Request

[Commercially Sensitive Information Redacted]

### 8.2 Project Spend Profile

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*Table 16: Project spend profile*

### 8.3 Efficient Cost

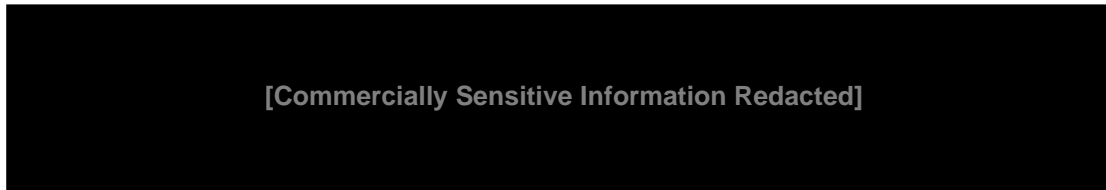
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### 8.4 Project Plan

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## 8.5 Key Business Risks and Opportunities

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*Table 17: Key business risks*

## 8.6 Outputs included in RIIO-2

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# 9 Glossary

Abbreviation/Term	Meaning
<b>NARMS</b>	Network Asset Risk Metric
<b>PAST</b>	Pipe Above Safety Threshold
<b>REP/2</b>	Management procedure for the replacement of below 7 bar mains and services
<b>LTRB</b>	Long Term Risk Benefit

*Table 18: Glossary Table*