Major Justification Paper: MJP06

West Winch HP Pipeline

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1 Summary Table

Name of Project	West Winch Pipeline		
Primary Investment Driver	Asset Health		
Project Initiation Year	2024		
Project Close Out Year	2035 – 2040 dependent on design outputs		
Total Installed cost estimate (£)	[cost data][1]		
Cost Estimate accuracy (%)	±10% to any estimated value		
Project Spend to date (£)	[cost data] (within RIIO-2 Financial Plan)		
Current Project Stage Gate	Feasibility		
Reporting Table Ref	5.01: LTS Pipelines, Storage & Entry		
Outputs included in RIIO-3 Business Plan	Yes		
Spend apportionment	**RIIO-2**	**RIIO-3**	**RIIO-4+**
	[cost data]	[cost data]	[cost data][2]
Regulatory Treatment	Price Control Deliverable		

Table 1: Summary Table for West Winch HP pipeline

All costs presented in this paper are pre-efficiency and are in 23/24 price base, unless otherwise stated.

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).

[1] Estimate cost: Low estimate is from asset deterioration model to maximise investment benefit, holding asset health stable until 2050. High estimate is from current feasibility which presents full pipeline replacement. Further study per the scope of this paper will re-evaluate total installed cost following full optioneering and CBA assessment.

[2] RIIO-4 spend apportionment for the delivery of RIIO-3 deliverables is to be confirmed following deliverability of the feasibility study. Total project spend less RIIO-3 ranges from [cost data] but this extends beyond RIIO-4

2 Executive Summary

The West Winch Pipeline is a c43km section of non-piggable high-pressure (HP) major accident hazard (MAH) pipeline, which feeds [sensitive data]. in the Eastern Network. The pipeline operates at 19Bar and is fed solely by West Winch Offtake to [sensitive data]. The pipeline was commissioned in the 1960's with spurs added throughout the 1970's and therefore initially transported manufactured (town) gas before being repurposed for natural gas. The design and construction methods used prior to the publication of industry standard IGEM/TD/1 had limitations, and we are now seeing an emerging trend of pipeline failures associated with pipeline fittings.

We have had 12 failures over the last 10 years at a total cost to date of [cost data]. These failures are attributed to mechanical fittings associated with the age of the pipeline and a prevalence of reduced depth of cover along its length increasing risk of damage. Using our pipeline deterioration model, we estimate that this pipeline could fail up to 10 more times in the next 10 years and could cost between [cost data]. in managing those risks.

This paper proposes to undertake a feasibility and design studies to select the optimum approach to managing the HP pipeline system. This paper also seeks funding to respond to any defects identified through asset investigation associated with design studies and base maintenance that pose an integrity risk. Such risk is associated with our Pipeline Safety Regulations (PSR, 1996) obligation to prevent serious injury from the hazard of stored energy because of the failure of a pressure system or one of its component parts. We are also obliged to demonstrate that all hazards that have the potential to cause a major accident are identified, the risks have been evaluated, the safety management system is adequate and that it is audited to ensure that associated risks to members of the public and employees are as low as reasonably practicable.

The outcomes we expect from this investment case will be to provide the lowest cost of ownership and support management of the resulting risks to safety, supply and environmental (carbon impacts) from any potential gas leak that each failure could cause.

The proposed RIIO-3 capital investment, funded via a price control deliverable, is to complete feasibility and design is [cost data] allowance for remediation activity following inspection and survey. The feasibility study target completion date is 2027, and we are proposing to submit a major justification paper into our base RIIO-4 business plan.

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Table 2: Trend of expenditure on West Winch

3 Project Status and Request Summary

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4 Problem/Opportunity Statement

4.1 Context and Background

The West Winch pipeline in Norfolk, Eastern, is a c.43km HP pipeline operating at 19bar and is fed solely by the West Winch Offtake. The pipeline has suffered 12 failures over the past 10 years, leading to complex, disruptive and expensive repairs; [cost data] in costs for remediation of the pipeline. As a result of these failures, we have started high level feasibility work (during RIIO-2) to understand the optimum approach to manage the integrity of the pipeline longer-term.

The pipeline runs from [sensitive data]. The orange highlight in Figure 1 below shows the HP pipeline sections under consideration in this investment case. Approximately 70% of the pipeline was commissioned in 1963 with the remaining pipeline and associated spurs being commissioned from 1976 (see
Table 3).

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Figure 1: Eastern Network Overall Map, Pipelines above 2 bar– including West Winch network

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Table 3: Summary of the specific pipeline sections under-review due to similar age and construction.

The pipeline and Above Ground Installation (AGI) are the sole feed to this area of the network and providing natural gas to [sensitive data].

Owing to its commissioning date and being a previous transporter of manufactured (town) gas, this pipeline is not piggable. We are therefore limited to monitoring cathodic protection (CP) performance and coating condition using over line survey techniques which impacts on the effectiveness by which we can identify defects and assess pipeline condition. The historic failures have resulted in the need to carry out complex, disruptive and expensive repairs. These are predominantly as a result of leakage of mechanical fittings. The intent of the investment outlined in this paper is to determine the most effective long-term management of this pipeline to stop the need for costly reactive repairs, reduce overall operational expenditure per annum and to reduce the risk on this sole feed and subsequent impact on disruption to customers.

4.2 Why are we doing this work and what happens if we do nothing

4.2.1 Our Strategic Intent

We have a duty as a gas transportation licence holder to uphold our statutory obligations to design, manage and operate a safe, secure and resilient network. If we do not act on identified integrity risks (corrosion, third party interference, mechanical damage, access) to our pipelines, we risk safety and security of supply which has insupportable legal, reputational and financial impact. Hence, doing nothing to intervene is discounted as a viable option.

Below summarises our obligations and commitments for which our investment must not allow contravention which would otherwise result in penalties, prosecution and enforcement action.

Safety – Legislative Compliance: We invest to ensure continued compliance with the Pressure System Safety Regulations 2000 (PSSR), Pipeline Safety Regulations 1996 (PSR) and other legislative requirements. Our Local Transmission System (LTS) transports large volumes of gas at very high pressure, failure would have significant safety implications. We have an obligation to prevent serious injury from the hazard of stored energy because of the failure of a pressure system or one of its component parts.

We are also obliged to demonstrate that all hazards that have the potential to cause a major accident have been identified, that the risks have been evaluated, that the safety management system is adequate and that it is audited to ensure that associated risks to members of the public and employees are as low as reasonably practicable.

Our proposed investment is in relation to compliance with PSSR (2000) Regulation 9 (Examination in accordance with the written scheme) and PSR (1996) Regulation 13 (maintenance of pipelines), together with interventions required in relation Regulations 12 (PSSR, 2000, Repair) and 15 (PSR, 1996, managing damage to pipelines).

Security of Supply **–** Regulatory compliance: We have a duty to comply with the terms of our gas transporter licence, specifically Condition 16 (Pipeline System Security Standards) to manage our network to meet the demand of connected customers by supplying to meet the peak aggregate daily demand. In the event of asset failure, such as a leak being identified the response is to isolate the affected pipe and repair. Given this is a sole feed pipeline, a bypass would be required to maintain security of supply to the pipeline section(s) for customers depend on that supply.

Environmental: Any leaks will result in the release of a gas to the atmosphere, with a resulting impact to carbon emissions. We have a target to reduce our network emissions by 2040 and net zero by 2050, any option that undermines our environmental commitments is not favourable.

Enabling future energy preparedness**:** Although future energy scenarios and hydrogen are not included in our RIIO-3 base investment, the feasibility and design for the future management of this pipeline will likely need to consider the introduction of hydrogen to the network, either as a blend or sole fuel. In the respect of biomethane, there is significant potential to attract injection into the network along this pipeline but the current risk of loss of transportation capacity to resolve faults may deter producers or lead us to declining the enquiry based on network capacity.

Providing Value for Money to Our Customers: it is imperative we provide the most efficient and cost-effective long-term solution to minimise customer bills. Reactive repairs impact on customer bills because of additional call out costs and the need for temporary repairs. Gas-leaks also result in 'lost gas' which has a commercial impact.

Financial: Any pipeline failure will have resulting costs to respond and mitigate the failure, to re-establish operation, repair and restore supply, this could run into millions of pounds. Options relating to managing the asset in a reactive way are costly and ultimately impact the customer bill. Any options that negatively impacts the customer bill is not favourable.

4.2.2 Historic Performance

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Figure 2: Locations of pipeline failures since 2015

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Table 4: Pipeline fault information.

4.2.3 Forecast failure rates and consequences of failure

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Figure 3: Plot showing the number of failures on the LTS system by the age of the pipe (Source: Asset Investment Manager, LTS asset model)

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Table 5: Forecast fault rate, by pipeline section

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Table 6: Consequence and impact of pipeline failures

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4.3 Under what circumstances would the need or option change for this project

4.4 What are we going to do with this project

4.5 What makes this project difficult

4.5.1 Operational and construction challenges

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4.8 Related Projects

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Figure 4: Growth in corrosion between 2017 and 2021 at [sensitive data] sections

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4.9 Project Boundaries

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5 Project Definition

[Commercially Sensitive Information: Section Redacted]

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6.3 Timing choices

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Table 10: Intervention modes and timing choices justification

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6.5.1 Feasibility and Conceptual Design

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Table 13: Cost breakdown table for proposed studies and investigations (RIIO-3)

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7.1 Key Business Case Drivers Description

7.2 Supply and Demand Scenario Sensitivities

7.3 Business Case Summary

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Figure 5: Summary of repair costs for baseline (do-minimum) option per pipeline section

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Figure 6: Do minimum monetised risk including reactive costs and social/private costs

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Figure 7: West Winch pipeline network- highest risk sections [sensitive data]

8 Preferred Option Scope and Project Plan

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8.1 Preferred Option for this Request

8.2 Spend profile

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Table 16: Capex spend profile RIIO-3

8.3 Efficient Cost

8.4 Project Plan

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Table 17: Indicative timescales for design and build

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Table 18: Indicative project plan for remedial works Key Business Risks and Opportunities

8.4.1 Project and Business Risk and Opportunities

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Table 19: Key Risks and Mitigations

8.5 Outputs included in RIIO-2 Plans

9 Regulatory Treatment

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Table 20: Proposed Price Control Deliverable

10 Glossary

Term	Definition
1 in 20 Demand Licence Condition	A regulatory requirement ensuring that the gas network can meet peak demand one in every twenty years
Capex	Capital Expenditures - Funds used by a company to acquire, upgrade, and maintain physical assets
CBA	Cost-Benefit Analysis - A process of evaluating the costs and benefits of a project or decision.
IGEM	Institution of Gas Engineers and Managers - A UK organisation providing standards and guidance for the gas industry (eg TD/)
NAMS	Network Asset Management Strategy – The network asset investment approach and methodology for asset management and decision making
Totex	Total Expenditure – in reference to the sum of operational expenditure (maintenance)and capital expenditure (upgrade)

Table 21: Glossary Table

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