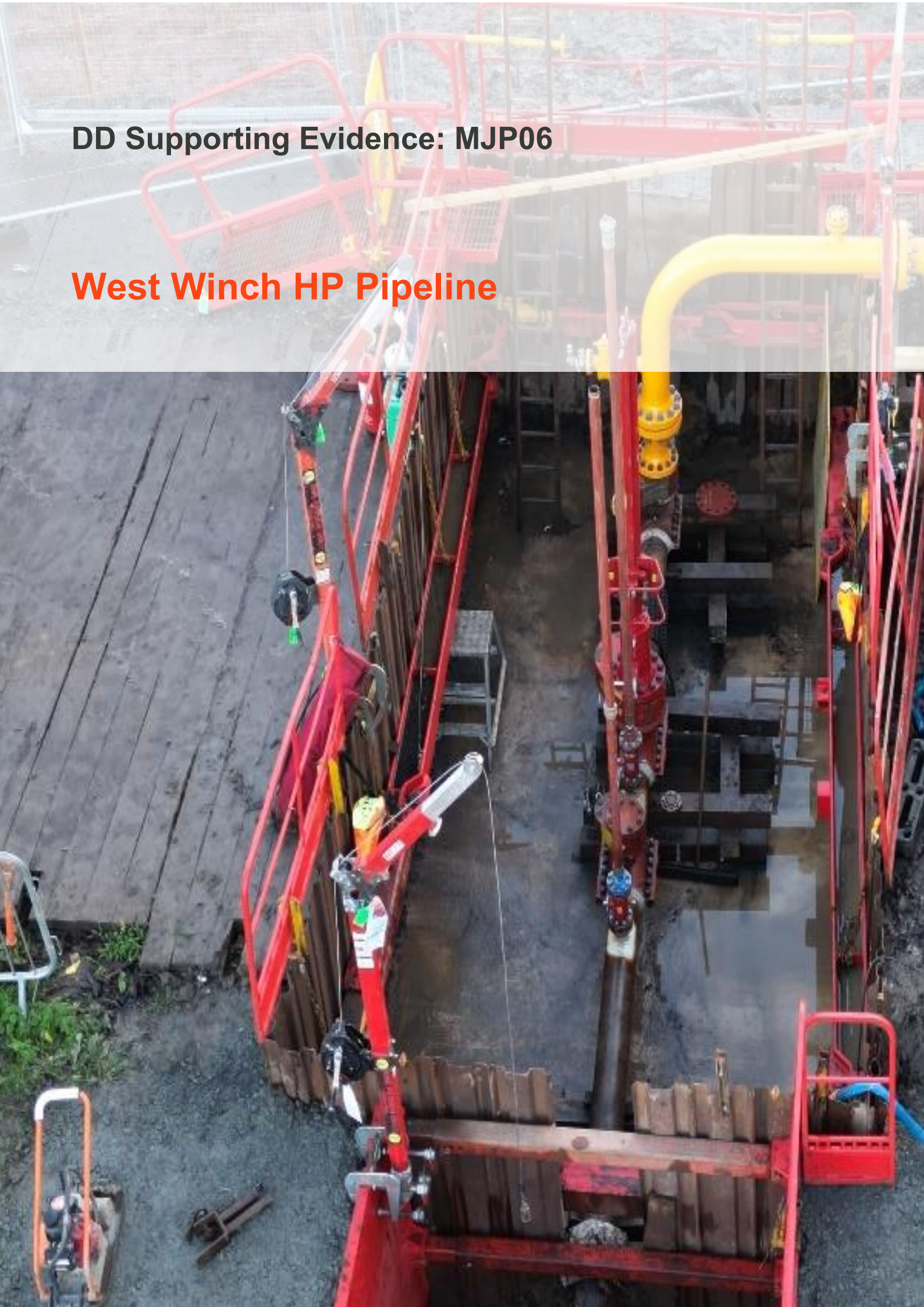
DD Supporting Evidence: MJP06

West Winch HP Pipeline



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1 Context

We note Ofgem's draft determination feedback indicating they recognise the need to manage the integrity of the West Winch high-pressure pipeline and that Ofgem have requested further clarification on the major project deliverables to support their assessment.

In our response we will:

- Explain the rationale and scope of the initial feasibility study and why further investigation is essential.
- Clarify the phased strategy for managing the pipeline through RIIO-3 and RIIO-4, including the separation of feasibility/design from construction.
- Provide detailed justification for the proposed Price Control Deliverable (PCD), including deliverables, cost apportionment, and alignment with precedent cases.

For clarity, the feedback provided by Ofgem for West Winch pipeline is shown in **Error! Reference source not found.**.

Feedback Source	Needs Case	Optioneering	Scope Confidence	Comments
RIIO-3 Draft Determinations – Cadent **Table 34: Summary of Cadent Engineering Recommendations**	Not Justified	Partially Justified	High Confidence	Proposed Outcome: Unjustified. This project is to carry out a feasibility and design study, as part of a plan to replace the pipeline in RIIO-4. The optioneering described in the paper relates to the construction phase of the work and does not focus on the alternatives to doing the feasibility study so it is not relevant. We are not satisfied that the information provided details the expected outputs of feasibility study, and there is no breakdown of expected costs. Therefore, we consider this EJP to be unjustified. We require detail on the deliverables and anticipated costs of the feasibility and design study.

Feedback Source	Needs Case	Optioneering	Scope Confidence	Comments
22nd July Ofgem Engineering – Cadent Bilateral				• Cadent to reframe the EJP narrative to clearly distinguish between feasibility/design and construction, and to articulate the phased strategy leading into RIIO-4. • Clarify need for expanded feasibility and the difference between remediation activity in RIIO3 and construction in RIIO4 • Ofgem acknowledged and understood the phased approach, with feasibility and design in RIIO-3 and construction intended for RIIO-4, subject to further clarification in the revised submission.

Table 1: Specific MJP06 feedback from the RIIO-3 Draft Determinations Cadent Annex

We disagree with the DD's proposal to reject the West Winch PCD. The proposed feasibility and design study is a critical step in identifying the most cost-effective, risk-optimised solution for managing the integrity of this deteriorating, non-piggable high-pressure pipeline.

Rejecting the PCD would undermine our ability to fully assess intervention options and deliver a robust investment case for RIIO4.

We believe the current assessment has misunderstood our asset management approach, interpreting the proposed RIIO3 activity as an unsubstantiated continuation of RIIO2 feasibility. In reality, the initial feasibility study was focused on full pipeline replacement and did not explore the broader range of asset management strategies now required. Our proposed RIIO3 activity represents a critical next phase through a structured, risk-based programme of feasibility, conceptual design, and targeted remediation to identify the most cost-effective, compliant, and customer focused long-term solution.

To ensure transparency and accountability, we have proposed a Price Control Deliverable (PCD) that enables clear delivery outputs, reporting, and the return of any unspent allowances to customers. The following supplementary information sets out the justification for this approach, including deliverables, cost apportionment, expanded feasibility rationale, and alignment with previous precedents such as London Medium Pressure and Tinsley Viaduct.

2 Executive Summary

Cadent is proposing a phased approach to manage the integrity of the 43km West Winch high-pressure pipeline, which has experienced [redacted]

The RIIO-3 proposal seeks funding for feasibility, conceptual design, and targeted remediation (not construction) laying the foundation for a robust investment case in RIIO-4.

The initial feasibility study, commissioned outside of RIIO-2 business plan allowances, was deliberately scoped to assess full pipeline replacement options only due to the observed volume of failures. This was intended to establish a baseline for technical feasibility, constructability, and cost estimation, and did not include alternative asset management strategies such as partial refurbishment or blended remediation. The cost of replacement was prohibitively expensive, and we therefore intend to build on this foundation by exploring blended intervention options.

The RIIO-3 phase expands this scope to include detailed asset investigation and optioneering of a broader range of interventions, including shell repairs, wrap systems, coating refurbishment, and localised diversions. Conceptual design will be developed for the highest-risk sections, supported by ground surveys and inspection data.

The proposed Price Control Deliverable (PCD) ensures transparency and accountability, with clear outputs and the return of any unspent allowances to customers. This approach aligns with precedent cases such as London Medium Pressure and Tinsley Viaduct, reinforcing Cadent's commitment to delivering safe, cost-effective, and proportionate interventions.

Total RIIO-3 funding requested is [redacted], comprising:

- [redacted] for feasibility
- [redacted] for conceptual design
- [redacted] for targeted remediation

This submission addresses Ofgem's feedback by clarifying deliverables, cost basis and apportionment, and the strategic rationale for phased investment, ensuring the integrity of this pipeline is managed effectively and responsibly.

3 Introduction

We are adopting a phased, risk-based, and transparent strategy to manage the integrity of the 43km West Winch high-pressure (HP) pipeline. This summary outlines the rationale for expanding the RIIO2 feasibility study for the West Winch high-pressure (HP) pipeline and our approach to manage asset risk through RIIO3 before any construction work commences in RIIO4.

4 Summary of RIIO3 and RIIO4 Deliverables

The table below summarises key activities and deliverables for RIIO3. We expect that through survey and feasibility in RIIO3 we will sufficiently understand the condition of the pipeline which will enable the development of a long-list and short-list of intervention options. This will culminate in conceptual design with costed options inclusive of construction risk.

Activity	Deliverable
Feasibility Study	Feasibility Study Report for the full 43km West Winch HP pipeline to assess condition, failure modes, and intervention options
Conceptual Design	Conceptual Design Report for the highest-risk sections [redacted] informed by inspection and survey data
Remediation	Pre-emptive remediation of defects identified during feasibility and inspection, ensuring compliance with PSR (1996) and PSSR (2000)
Major Justification Paper	Compile and submit an MJP in the RIIO4 Business Plan submission for funding of the preferred intervention strategy

Table 2: Summary of RIIO3 Deliverables

4.1 RIIO3: Feasibility, Design, and Targeted Remediation

The tables below detail structured deliverables and key activities that will be undertaken during the feasibility and conceptual design phases of this project. The objective is to develop a robust, costed, and engineering-justified solution that supports progression to detailed design.

Deliverable	Deliverable Requirement	RIIO-2 Delivery	RIIO-3 Planned Delivery
Feasibility Study Report	Summary of options, technical info, safety assessment, drawings, recommendations	Initial study focused on full pipeline replacement of pipeline	Assess options for blended asset management strategies for the West Winch pipeline

Deliverable	Deliverable Requirement	RIIO-2 Delivery	RIIO-3 Planned Delivery
Asset Condition Assessment	To inform the development of a long-list and short-list of intervention options	Desktop assessment of historical remediation records, geospatial files and strip maps for pipeline routing, spatial constraints and depth of cover, operational drawings and cathodic protection performance	Field based assessment of 43km pipeline to locate pipeline fittings and assess ground conditions using techniques like ground-penetrating radar and trial pits. Identify constraints such as ground conditions, flood zones, and proximity to infrastructure.
Cost Estimation	Itemised cost estimates inclusive of design, materials, installation, and associated indirect costs	High-level cost estimates for full pipeline replacement	Provide a high-level, bottom-up cost estimate for pipeline replacement options, including AGI modifications and route-specific constraints, with an expected accuracy range of +/-30%, excluding inflation
Key Activities			
Project Scoping	Justification and need for project	Included in initial feasibility study to explore full pipeline replacement options in response to a growing number of failures	Assess the optimum long-term solution for managing the asset health of a 43km section and the supply resilience of the West Winch pipeline system.
Pipeline Route / Remediation Options	Identification of long and short list for asses management options with constraints	Preferred route identified for full replacement	Review options in initial feasibility as well as blended remediation options
Design/Technical Info	Flow, pressure, materials, compatibility	High-level technical data or full replacement	Detailed engineering data for multiple intervention modes

Deliverable	Deliverable Requirement	RIIO-2 Delivery	RIIO-3 Planned Delivery
Safety Engineering	Compliance with PSR, CDM, etc.	Formal Process Safety Assessment (FPSA) Hazard identification (HAZID) complete	FPSA planning initiated for HAZID and safety assessments
Engineering Drawing (line drawings, pressure system drawing, general arrangements etc)	Basic engineering drawings developed for short-list options	Preliminary diagrams included	Updated drawings to reflect blended remediation options
Recommendations	Costed preferred option(s) and rationale	Full replacement option recommended and costed	Recommend costed preferred option, inclusive of CBA
Outline Project Plan	High-level project plan with deliverables and key milestones	Indicative timelines provided	Detailed programme developed with milestone tracking
Environmental Assessment	Initial scoping and legislative compliance	Environmental determination issued	Review Environmental Impact Assessment and update as required
Company Audit & Review	Internal review of feasibility	Governance embedded; review with Operations, Engineering, Delivery Partners and Asset Investment Teams	Review and sign-off in line with internal process. Additionally, through PCD (proposed for transparency and assurance) inform Ofgem on project progress / stage-gate

Table 3: Feasibility design deliverables and activities

Deliverable	Deliverable Requirement	RIIO-3 Planned Delivery
Conceptual Design Report	Detailed design rationale, options, and recommendation	A conceptual design report for the most at-risk pipeline sections (for detailed design and delivery in RIIO4). Modelling indicates this is likely to be sections for [redacted] and [redacted] but feasibility and field-based asset assessment will inform sections that progress to conceptual
Cost Estimation	Itemised cost estimates inclusive of design, materials, installation, and associated indirect costs	Refined, itemised cost estimate for the selected pipeline replacement concept, incorporating validated design parameters, updated route data, and constructability assessments, with improved cost confidence over feasibility estimates and reduced contingency assumptions
Key Activities		
Pipeline Route / Remediation	Developed investment options with route and corridor detailed for any re-routing	Intervention mode(s) defined and confirmed for targeted interventions
Design/Technical Info	Detailed process and specifications for mechanical, civil, E&I including flow, pressure, materials, compatibility	Build on feasibility for preferred option(s)
Safety Engineering	Compliance with PSR, CDM, etc and risk assessments completed	FPSA completed; HAZID and Hazard Operability (HAZOP)
Engineering Drawing (line drawings, pressure system drawing, general arrangements etc)	Detailed drawings and strategic materials	Detailed drawings for design and construction
Recommendations	Costed final option for detailed design	Preferred option identified with engineering justification and cost break down with CBA
Outline Project Plan	Detailed project plan with lead times	Programme developed and tracked

Key Activities		
Environmental Assessment	Environmental and planning constraints identified including surveys, mitigation, consultation	Detail environmental constraints with mitigating actions, as required
Company Audit & Review	Design appraisal, easement compliance and internal review and sign-off for engineering and cost justifications	Review and sign-off in line with internal process (including land access strategy). Additionally, through PCD (proposed for transparency and assurance) inform Ofgem on project progress / stage-gate

Table 4: Conceptual design deliverables and activities

4.2 RIIO-4: Detailed Design and Construction

The culmination of the RIIO3 phase is a costed, CBA-supported, engineering-justified option that meets design code compliance, constructability, resilience, and sustainability criteria. This deliverable enables Cadent to progress confidently into Detailed Design and Delivery under RIIO-4, with a clear understanding of scope, cost, and programme.

RIIO4 therefore, will focus on delivery of detailed design and construction of selected intervention based on the RIIO3 feasibility outcomes. We will execute delivery of our long-term asset management strategy which potentially will include partial replacement, refurbishment, or network reconfiguration.

5 Why expand the initial feasibility study?

The initial feasibility study for the West Winch pipeline was not included in our RIIO2 submission but was commissioned by Cadent and delivered by Murphy Applied Engineering to explore full pipeline replacement options in response to a growing number of failures [redacted] and increasing operational risk. The study was initiated to assess technically and commercially viable rebuild scenarios that could support future resilience and accommodate increased demand for West Winch Offtake. During early project workshops, it was agreed by Engineering and Operations that the study would focus exclusively on full replacement options based on the volume and nature of historic failures (particularly at fittings and legacy features such as dip points and threaded connections) which had raised concerns about the long-term viability of the existing asset.

As such, the initial feasibility study was not intended to define a comprehensive asset management strategy, but rather to establish a baseline understanding of full rebuild options and their implications. It provided valuable insight into constructability, routing, Offtake modifications, and cost estimates for various replacement scenarios, however the cost for replacement is prohibitively expensive and therefore need to satisfy ourselves and Ofgem that this is the best course of action for the asset integrity and value for the customer. The current RIIO3 proposal builds on foundation of this feasibility by expanding the scope to include detailed asset investigation and optioneering of alternative strategies, such as partial refurbishment, localised diversion, and blended remediation, to make sure a holistic, proportionate, and cost-effective long-term approach is applied to manage the integrity of this critical pipeline. The study will inform an evidence-based investment decision for RIIO4, ensuring compliance with PSR (1996) and PSSR (2000), while minimising customer cost and risk.

6 The case for optioneering blended remediation

Blended remediation options offer a flexible and cost-effective approach to managing the integrity of the West Winch pipeline. Rather than relying solely on full-scale replacement, it allows for targeted interventions that address specific defects and risk factors. The key techniques include, but are not limited to:

- Shell Repairs: Steel shells can be clamped around damaged or corroded areas to restore structural integrity without removing the pipe.
- Wrap Systems: Composite wrap technologies reinforce pipeline sections with external corrosion or minor defects, extending asset life.
- Coating Refurbishment: Recoating exposed or degraded pipeline surfaces helps prevent further corrosion and environmental degradation.
- Cut-Out and Replacement: Severely affected pipeline segments can be removed and replaced with new pipework, restoring full functionality.
- Localised Diversion: Short reroutes can be implemented to bypass areas with persistent access, depth of cover, or proximity issues.

Examples: [redacted] may require cut-out and wrap repairs; [redacted] with reduced depth of cover issues may benefit from coating refurbishment and diversion; spur lines like [redacted] and [redacted] could use shell repairs and coating renewal.

The proposed feasibility and design study for RIIO-3 will assess the suitability of these blended options and develop a tailored intervention strategy for each section.

7 RIIO-3 Funding Apportionment and Outcomes

7.1 Basis of Costs

This section outlines the cost structure underpinning the design (feasibility and conceptual) phases and remediation of the West Winch pipeline. The cost estimates have been developed collaboratively by Capital Delivery and JMS Murphy.

The cost estimates have been developed using a bottom-up methodology, grounded in JMS Murphy's estimations and validated against market norms. Each cost item is directly linked to a defined activity which provides line of sight between technical scope and financial allocation. The estimates are phased across a multi-year delivery programme, with start and end dates aligned to RIIO-3 and RIIO-4 timelines, reinforcing a realistic time frame.

Finally, all cost categories are mapped to Ofgem's Regulatory Instructions and Guidance (RIGs), ensuring regulatory alignment across direct and indirect company costs, vendor packages, specialist services, and asset investigations. This approach gives Ofgem confidence that the costs are appropriate, proportionate, and ready to support investment decisions.

The final deliverable is a costed, engineering-justified option suitable for progression to detailed design and delivery under RIIO-4.

7.2 Cost Breakdown and Apportionment

The table below provides cost per RIIO3 deliverable and its overall contribution to the submitted PCD allowance.

Activity	Cost (£m)	% of Total
Feasibility Study	[redacted]	12.2%
Conceptual Design	[redacted]	19.8%
Remediation Works	[redacted]	68.0%
Total	[redacted]	100%

Table 5: Cost Per RIIO3 Deliverable

Feasibility and Design [redacted] will deliver:

- Ground-penetrating radar, trial pits, and overland surveys
- Identification of pipeline fittings and ground conditions
- Conceptual design for [redacted]

Remediation [redacted] will enable:

- Targeted interventions on defects forecasted in RIIO-3

- Compliance with safety regulations
- Avoidance of reactive repair costs and supply disruptions in the event of asset failure

The table below provides a cost breakdown of feasibility and design studies for the RIIO3 deliverable and each activity's overall contribution to the submitted PCD allowance.

Cost Item	Feasibility (£m)	Concept Design (£m)	Total (£m)	% of Total
Engineering Design	[redacted]	[redacted]	[redacted]	81.9%
Project Management	[redacted]	[redacted]	[redacted]	5.1%
Contingency	[redacted]	[redacted]	[redacted]	13.0%
Total	[redacted]	[redacted]	[redacted]	**100%**

Table 6: Cost Breakdown of Feasibility and Design Studies for the RIIO3 Deliverable

Note: All costs are in 2023/24 price base and reflect market-tested rates from Cadent's capital delivery programme.

8 Alignment with London Medium Pressure and Tinsley Approaches

The approach for West Winch mirrors our strategy for the Tinsley Viaduct which is an aged, sole-feed pipeline with constrained access and high consequence of failure. Feasibility and conceptual design preceded intervention planning.

Key similarities between the West Winch and Tinsley Viaduct projects:

- Sole-feed pipelines with high customer impact
- Non-piggable assets requiring bespoke inspection and remediation
- Phased investment to ensure right interventions at the right time
- Transparent engagement with Ofgem to justify investment and manage risk

This response reinforces our commitment to transparency, regulatory compliance, and customer value, ensuring that interventions are timely, justified, and proportionate.

9 Conclusion

Cadent's overall approach to managing the West Winch HP pipeline is a phased, risk-based strategy that prioritises safety, compliance, and long-term value for customers. In RIIO-3, we are undertaking a comprehensive feasibility study, and a conceptual design for the highest-risk sections of the 43km non-piggable pipeline, alongside targeted remediation to address known defects. This will enable us to identify the most cost-effective and risk-optimised intervention strategy (whether full replacement, refurbishment, or blended remediation) for implementation in RIIO-4.

A PCD has been proposed to ensure full transparency with Ofgem, provide clear accountability for deliverables, and allow any unspent remediation allowances to be returned to customers, reinforcing our commitment to making the right interventions at the right time.