

**Gas
Transmission**

RIO-2 Cost Assessment Working Group

National Grid current thinking
22nd October 2018

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Gas
Transmission

01




Cost Assessment





















































































Review of RIIO-1
approach

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





























































RIO-1 cost assessment and drivers

Key; Most suitable  Suitable  Partially suitable 

Cost area	Cost Category	Ranged T1 Spend (£m, 09/10)	Cost determination method					Uncertainty Mechanism		CBA required	Cost driver	Sensitivity to FES scenario	T2 Change
			Historic	Bespoke quote	Benchmark	Independent review	Unit cost	Revenue driver	Review				
TO Capex - Load related	Entry	10-20								Customer commitment	Customer demand for storage or entry capacity	Volume but not funding	→
	Exit	<10								Customer commitment	Customer demand for storage or exit capacity	Volume but not funding	→
	Flexibility	10-20									1-in-20 compliance, customer demand for increased flow variability	Medium - Longer Term	↑
	Offtakes	10-20								Customer commitment	Customer demand for connection to the NTS	Volume but not funding	↑
TO Capex - Non load related	Asset health	400-750								Monetised risk	Condition of assets, stakeholder requirements for availability and reliability of network, total and locational supply and demand patterns	Medium - Longer Term	↑
	Emission Reduction	200-400									Emission legislation and need for capability provided	Medium - Medium Term	→
	Diversions	50-100								Customer commitment	Customer activity e.g. highways /rail	N/A	→
	Physical security	100-200								Mandated	Government policy	Medium - Longer Term	↓
	Decommissioning	<10								Some customer driven	Customer disconnections and changing supply /demand patterns	Medium - Longer Term	↑
TO Capex - Non operational capex	IT	50-100								For large investments	Asset management strategy, regulatory reporting, corporate policy inc. cyber, controls. Number and location of employees.	Low	→
	Buildings / Plant / Fixtures	10-20								N/A	Number and location of employees, changing working practices e.g. flexible arrangements	Low	→
	Vehicles	<10								N/A	Number and location of employees, changing working practices e.g. flexible arrangements	Low	→

RIO-1 cost assessment and drivers

Key; Most suitable  Suitable  Partially suitable 

Cost area	Cost Category	Ranged T1 Spend (£m, 09/10)	Cost determination method					Uncertainty Mechanism		CBA required	Cost driver	Sensitivity to FES scenario	T2 Change
			Historic	Bespoke quote	Benchmark	Independent review	Unit cost	Revenue driver	Review				
TO Opex	Business support	200-400								N/A	Number and location of employees, regulatory requirements, corporate policy	Low	→
	Closely associated indirects	100-200								N/A	Asset management strategy, engineering policy, regulatory reporting, corporate policy inc. controls. Work volume.	Low	→
	Faults	20-50								N/A	Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation	Low	→
	Planned Inspections & Maintenance	100-200								N/A	Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation	Low	→
	Other direct costs	20-50								N/A	Condition of assets, stakeholder requirements for availability and reliability of network, engineering policy, compressor operation	Low	→
	Quarry & Loss	20-50								For larger discretionary investments	Weather, farming practices, third party development, new gas infrastructure	Low	→
	Physical security	20-50								N/A	Government policy, engineering policy, number of sites to be protected	Low	→
SO Capex	IS	100-200								For larger discretionary investments	EU and UK market change, customer requirements, IS policy	Low	→
	Agency (xoserve)	20-50								For larger discretionary investments	EU and UK market change, customer requirements, IS policy	Low	→
	Cyber (enhanced security)	50-100								For larger investments	EU Directives, UK law, changing threat vectors, technology developments	Low	→
SO Opex	Business support	100-200								N/A	Number and location of employees, legislative requirements, corporate policy	Low	→
	Direct opex	200-400								N/A	Stakeholder requirements for availability and reliability of network, products and services e.g. capacity auctions, information provision, market change, charging developments	Low	→
Total		ca. £2.5bn											

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02

Cost Definitions

Initial thoughts

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Core Business Plan Structure

Executive Summary	External Context	Stakeholder Engagement	Key Stakeholder Priorities The bulk of the story lives here			
<ul style="list-style-type: none"> • Director foreword • Who we are, what we do • Track record • Customer proposition • Consumer Bill impact • Intro the to the priorities 	<ul style="list-style-type: none"> • Energy scenarios • Future of networks • Planning assumptions • Responding to decarbonisation policy 	<ul style="list-style-type: none"> • Constructive engagement approach • Interaction with stakeholder group • Overarching Stakeholder approaches for T2 	I want to take gas on and off the Transmission system where and when I want	I want to connect to the Transmission System	I want all the information I need to run my business, and to understand what you do and why	I want you to facilitate the whole energy system of the future – Innovating to meet the challenges of an uncertain future
			I want you to protect the Transmission system from cyber and external threats	I want you to care for communities and the environment	I want the gas system to be safe	I want you to be efficient and affordable

Structuring our thinking

Stakeholder influence	Outputs	Cost	Regulatory treatment
<ul style="list-style-type: none">• Capturing clearly how stakeholders have influenced our business plan• How do we want to further engage stakeholders	<ul style="list-style-type: none">• What could be the specific outputs that we will deliver in RIIO-2 for this priority	<ul style="list-style-type: none">• Our emerging view of cost to deliver our activities based on current forecasts	<ul style="list-style-type: none">• Our view of how we will fit with the three output categories for this priority

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03

Cost Benefit Analysis

Initial thoughts

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CBA Success Factors

A successful outcome would be;

A common methodology across gas and electricity which provides a consistent approach to non-monetised impacts (e.g. environmental and social impacts) using recognised quantification techniques

Clear criteria for defining which regulatory decisions are subject to a CBA, agreed in a timely manner with Ofgem

Consistency of inputs and assumptions facilitates transparent results which can be easily shared and understood by stakeholders, both in the submission build and for the duration of the price control

Provides stakeholders the data they need to evaluate and ratify our investment decisions

For and against an ‘ED1’ style approach

For	Against
Consistent with preferred Ofgem approach, with the potential for greater consistency across TOs	Current template may not support risk based / condition based asset replacement (as per CEPA assessment of ED1)
Simple Excel template that is easily navigated and understood by all stakeholders	Simplistic model doesn’t adequately take into account whole system impacts
Provides a consistent approach with the UK Government’s Green Book on investment appraisal	Lack of clarity around how the model links to the needs case and existing processes such as NOA
The model is available today and can be used in our stakeholder engagement now	No agreed criteria for demonstrating completeness of long and short lists of engineering options
Removes the time and capacity required to develop a new approach	No consensus on how sensitivity analysis should be performed
The benefits and limitations are well known (and recognised by Ofgem?) given independent CEPA review of ED1 process	
Provides consistency with ED1 and there is some opportunity to exploit knowledge/learnings from ED contacts	

Discussion topics:

1. **Clarifying the linkage between needs case and CBA**
2. **Establishing selection criteria for which investments should be subject to a CBA:**

Legislative (e.g. safety) or confidential (e.g. cyber security) requirement

Funded through a different mechanism (e.g. Incentive)

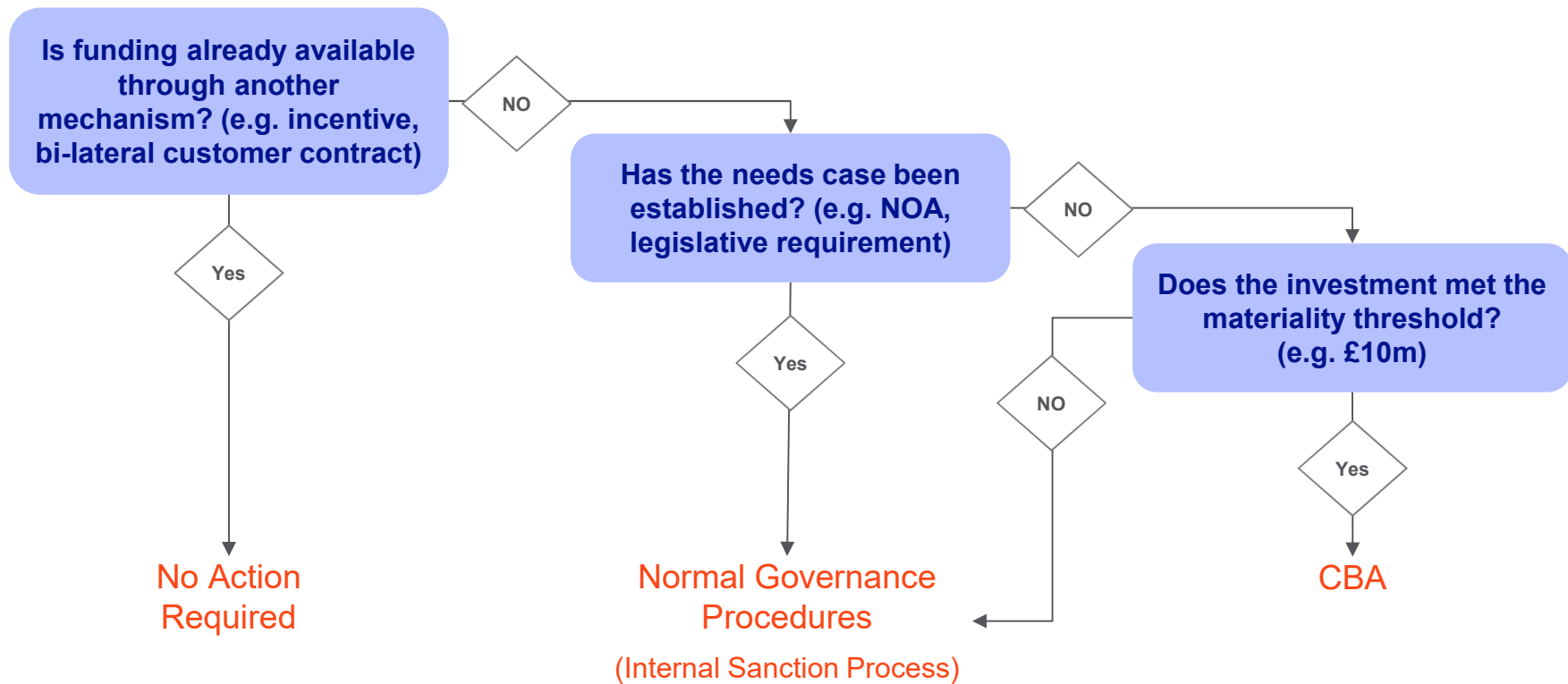
Materiality threshold

3. **Agreeing approach to demonstrate all possible options have been identified and appropriately evaluated**

Long list vs short list

4. **Defining methodology for applying probability to outcomes**

Use of CBA in RIIO-2 Business Plans



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