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Making a positive difference for energy consumers

Consultation

RIIO-2 Draft Determinations – National Grid Gas Transmission Annex

Publication date	09 July 2020	**Contact:**	RIIO Team
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Our aim for the RIIO-2 price controls is to ensure energy consumers across GB get better value, better quality of service and environmentally sustainable outcomes from their networks.

In May 2019, we set out the framework for the price controls in our Sector Specific Methodology Decisions. In December 2019, Transmission and Gas Distribution network companies and the Electricity System Operator (ESO) submitted their Business Plans to Ofgem setting out proposed expenditure for RIIO-2. We have now assessed these plans. This document, and others published alongside it, set out our Draft Determinations for company allowances under the RIIO-2 price controls, for consultation. We are seeking responses to the questions posed in these documents by 4 September 2020. Following consideration of responses we will make our Final Determinations at the end of the year.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at Ofgem.gov.uk/consultations. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

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1. Introduction and overall package

Purpose of this document

1.1 This document sets out our Draft Determinations and consultation positions for the gas transmission (GT) price control RIIO-GT2, for both the NGGT Transmission Owner (TO)[1] and System Operator (SO).[2] This price control will cover the five-year period from 1 April 2021 to 31 March 2026. All figures in this document are in 2018/19 prices, except where otherwise stated.

1.2 Our proposal for NGGT's Allowed Revenue is underpinned by a large set of proposals across output design, cost assessment and finance.

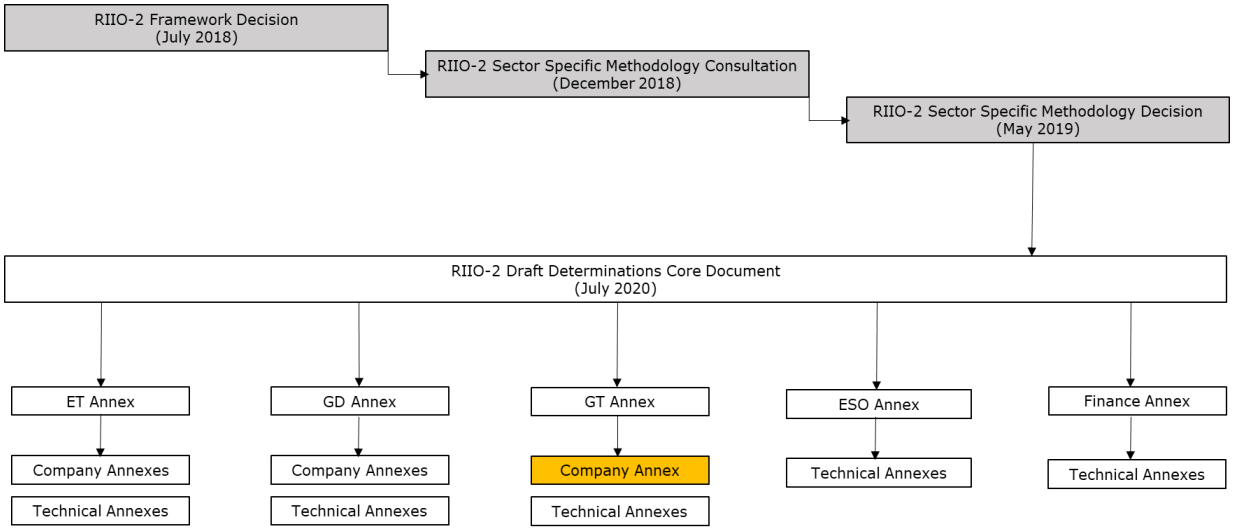
1.3 The purpose of this document is to focus on NGGT and:

- support stakeholders in navigating the individual proposals across the suite of RIIO-2 Draft Determinations Documents that make up NGGT's overall Allowed Revenue
- set out any proposals that are specific to NGGT, including:
  - baseline costs allowances
  - common and bespoke Output Delivery Incentives (ODIs)
  - Price Control Deliverables (PCDs)
  - Licence Obligations (LOs)
  - Consumer Value Propositions (CVPs)
  - Uncertainty Mechanisms (UMs)
  - Network Innovation Allowance (NIA)
  - reward or penalty under the Business Plan Incentive (BPI).

1.4 This document is intended to be read alongside the RIIO-2 Draft Determinations Core Document (Core Document) and RIIO-2 Draft Determinations - Gas Transmission Sector Annex (GT Annex). Figure 1 below sets out where you can find information about other areas of RIIO-2 Draft Determinations.

[1] NGGT, in its role as the TO, owns and maintains the network assets. It is responsible for maintaining the integrity of the networks, developing asset replacement schedules and for providing transmission services to the SO.
[2] NGGT, in its role as the SO is responsible for the day-to-day operation of the national transmission system, including balancing supply and demand, maintaining satisfactory system pressures and ensuring gas quality standards are met.

Figure 1: RIIO-2 Draft Determinations documents map



What makes up NGGT's Draft Determinations?

1.5 We have structured our price control consultation positions around a series of building blocks. The building blocks reflect how we set companies' Allowed Revenue. Table 1 below provides stakeholders with a map of where to find the proposals that make up the Draft Determinations for NGGT.

Table 1: RIIO-2 building blocks and NGGT's Draft Determinations

Building Block		Where to find the Draft Determinations	
		Approach/ Methodology	Company specific parameters
Base Revenue (BR)	Legacy items from previous controls including RIIO-1 RAV and close-out adjustments	Regulatory Finance Annex – Chapter 11	Regulatory Finance Annex – Chapter 11
	Common ODIs, PCDs & LOs	Core Document Chapter 4	This document - Chapter 2
	Bespoke ODIs, PCDs & LOs	Core Document – Chapter 4	This document - Chapter 2
	Baseline Totex	Core Document – Chapter 5	This document – Chapter 3
	Capitalisation Rate (Fast/Slow Money)	Regulatory Finance Annex – Chapter 11	Regulatory Finance Annex – Chapter 11
	WACC Allowance	Core Document – Chapter 6 Regulatory Finance Annex – Chapter 4	Core Document – Chapter 6 Regulatory Finance Annex – Chapter 4
	Depreciation Allowance	Regulatory Finance Annex – Chapter 10	Regulatory Finance Annex
	Tax Allowance	Regulatory Finance Annex – Chapter 7	Regulatory Finance Annex – Chapter 7
	Innovation	Core Document – Chapter 8	This document - Chapter 5
	Cyber and Physical security	Core Document – Chapter 7	This document - Chapter 3
Adjustments to BR for company performance	Totex Incentive Mechanism (TIM)	Core Document – Chapter 10	Core Document – Chapter 10
	Network Asset Risk Measure (NARM)	Core Document – Chapter 5 NARM Annex – Appendix 3	This document - Chapter 3
	BPI Reward/Penalty	Core Document – Chapter 10	This document - Chapter 1
	Return Adjustment Mechanism (RAM)	Regulatory Finance Annex – Chapter 8	Regulatory Finance Annex – Chapter 8
Rules to adjust BR for other factors	Uncertainty Mechanisms (including Pass-through)	Core Document – Chapter 7	This document - Chapter 4
	Policy Indexation (RPE, ongoing efficiency)	Core Document – Chapter 5	Core Document – Chapter 5
	Other Indexation (RAV, CoE, CoD)	Regulatory Finance Annex – Chapter 9	Regulatory Finance Annex – Chapter 9
	Whole System Mechanisms	Core Document – Chapter 7	Core Document – Chapter 7
	Pensions	Regulatory Finance Annex – Chapter 11	This document -Chapter 3
	Directly Remunerated Services	Regulatory Finance Annex – Chapter 11	Regulatory Finance Annex – Chapter 11

An overview of NGGT's RIIO-GT2 price control

1.6 A summary of our Draft Determination consultation position for NGGT's baseline totex is presented in Table 2 below. This reflects our view of efficient costs that will form the baseline totex for RIIO-GT2 price control period. We have set baseline totex allowances for NGGT only where we are satisfied of the need for and certainty of the proposed work, and where there is sufficient certainty of the efficient cost of the work. For further details of the values in Table 2, please refer to Chapter 3 of this document.

Table 2: NGGT baseline funding request and Ofgem's proposals

Cost category	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Load related expenditure	11.59	2.44
Non-load related	898.74	517.51
Other costs	545.80	230.31
Non-op Capex	296.50	68.40
Network operating costs	389.51	379.65
Indirect costs	518.24	411.10
Ongoing efficiency	-57.92	-50.50
Total	**2,602.45**	**1,558.91**

1.7 We propose to reduce NGGT's Totex Incentive Mechanism (TIM) sharing factor from 44.7% in RIIO-GT1 to 36.7% in the RIIO-GT2 price control. Further details can be found in Chapter 10 of the Core Document.

1.8 Our Draft Determinations consultation position on the outputs for NGGT in RIIO-GT2 are set out in Table 3 below. Further details of our proposed position on outputs can be found in Chapter 2 of this document.

Table 3: Proposed NGGT outputs

Output name	Output type	Further detail
Common outputs - set by Ofgem		
Meeting the needs of consumers and network users		
Customer satisfaction survey	ODI (Financial)	This document - Chapter 2
Quality of demand forecast	ODI (Financial)	This document - Chapter 2
Maintenance	ODI (Financial	This document - Chapter 2
Entry and exit capacity constraint management	ODI (Financial)	This document - Chapter 2

Output name	Output type	Further detail
Residual balancing	ODI (Financial)	This document - Chapter 2
Emergency response and enquiry service	LO	Sector Specific Methodology (SSMD) GT Annex[3] - Chapter 2
Connections	LO	SSMD GT Annex[4] - Chapter 2
Deliver an environmentally sustainable network		
Greenhouse gas emissions (venting)	ODI (Financial)	This document - Chapter 2
NTS shrinkage	ODI (Reputational)	This document - Chapter 2
Annual Environmental Report on Environmental Action Plan commitments	LO	This document - Chapter 2
Maintain a safe and resilient network		
Network asset risk metric	PCD	Core Document – Chapter 5 NARM Annex – Appendix 3
Cyber resilience	Use-it-or-lose-it allowance, PCD	This document - Chapter 3 Core Document – Chapter 7
Physical resilience	PCD	This document - Chapter 3 Core Document – Chapter 7
Annual network capability assessment report	LO	This document - Chapter 2
Exit capacity	LO	GD Sector Annex – Chapter 2
1-in-20 peak day demand capability	LO	SSMD GT Annex[5] - Chapter 4
Bespoke outputs - proposed by NGGT		
Meeting the needs of consumers and network users		
Stakeholder experience incentive	ODI (Reputational)	This document - Chapter 2
Deliver an environmentally sustainable network		
Environmental incentive	ODI (Financial)	This document - Chapter 2
Decommissioning	PCD	This document - Chapter 3
Asset health – non-lead assets	PCD	This document - Chapter 3
Compressor emissions - Wormington	PCD	This document - Chapter 3
Compressor emissions – King's Lynn	PCD	This document - Chapter 3
Compressor emissions – Peterborough	PCD	This document - Chapter 3
Compressor emissions – St Fergus	PCD	This document - Chapter 3
Bacton terminal site redevelopment	PCD	This document - Chapter 3
King's Lynn subsidence	PCD	This document - Chapter 3

[3] No change since SSMD, paragraphs 2.118 - 2.126 in SSMD GT Annex.
[4] No change since SSMD, paragraphs 2.77 - 2.84 in SSMD GT Annex.
[5] No change since SSMD, paragraphs 4.53 - 4.60 in SSMD GT Annex.

1.9 Our Draft Determinations consultation position on the uncertainty mechanisms for NGGT in RIIO-GT2 are set out in Table 4 below. Further details of our proposed position on uncertainty mechanisms can be found in Chapter 4 of this document.

Table 4: Proposed NGGT uncertainty mechanisms

UM name	UM type	Further detail
Common UMs – across all sectors		
Ofgem Licence fee	Pass-through	Core Document - Chapter 7
Business rates	Pass-through	Core Document - Chapter 7
Bad debt	Pass-through	Regulatory Finance Annex – Chapter 11
Inflation indexation of RAV and allowed return	Indexation	Regulatory Finance Annex - Chapter 9
Cost of debt indexation	Indexation	Regulatory Finance Annex - Chapter 5
Cost of equity indexation	Indexation	Regulatory Finance Annex - Chapter 5
Real Price Effects	Indexation	Core Document – Chapter 5
Tax review	Re-opener	Regulatory Finance Annex – Chapter 7
Pensions (pension scheme established deficits)	Re-opener	SSMD Finance Annex - Chapter 7
Physical security	Re-opener	Core Document - Chapter 7
Cyber resilience IT	Re-opener	Core Document - Chapter 7
Cyber resilience OT	Re-opener	Core Document - Chapter 7
Coordinated Adjustment Mechanism	Re-opener	Core Document - Chapter 7
Net Zero	Re-Opener	
Non-operational IT & Telecoms	Re-opener	Core Document - Chapter 7
UMs for NGGT only		
Central Data Services Provider costs (was called The Gas Transporters share of Xoserve costs)	Pass-through	SSMD GT Annex - Chapter 6
Independent Systems	Pass-through	SSMD GT Annex - Chapter 6
Policing cost associated with Counter-Terrorism Act 2008	Pass-through	SSMD GT Annex - Chapter 6
Incremental capacity	Re-opener	This document - Chapter 4
Quarry and Loss	Re-opener	This document - Chapter 4
Pipeline diversions	Re-opener	This document - Chapter 4
Bacton terminal site redevelopment	Re-opener	This document - Chapter 4
King's Lynn subsidence	Re-opener	This document - Chapter 4
Asset health – non-lead assets	Re-opener	This document - Chapter 4
Compressors	Re-opener	This document - Chapter 4
GT Opex escalator	Indexation	This document - Chapter 4

1.10 We propose £20.00m for NGGT's Network Innovation Allowance (NIA), conditional on an approved industry-led reporting framework. Further details of our position on the NIA for NGGT can be found in Chapter 5 of this document. Our general approach to the NIA is set out in Chapter 8 of the Core Document.

1.11 Table 5 below summarises our assessment of NGGT against the Business Plan Incentive (BPI), and sets out where you can find additional detail.

Table 5: Summary of proposed NGGT BPI performance

BPI Stage	Proposed outcome	Further detail
1	Fail. Penalty of £7.79m	Chapter 10 of the Core Document for approach to assessment and rationale.
2	NGGT not eligible for a reward under BPI Stage 2 due to failure at BPI Stage 1. In the event that our position on NGGT's Stage 1 outcome changes because of this consultation, we have provided our views on NGGT's we have provided our views on NGGT's CVPs in Chapter 2.	Chapter 10 of the Core Document for approach to assessment. Chapter 2 of this document for views on specific proposals.
3	Penalty of £18.60m	Chapter 10 of the Core Document for approach to assessment. Chapter 3 of this document for specific views on NGGT performance.
4	NGGT not eligible for a reward under BPI Stage 4 due to failure at BPI Stage 1.	Chapter 10 of the Core Document for approach to assessment. Chapter 3 of this document for specific views on NGGT performance.
Cap calculation	Total penalty before cap: £26.39m Proposed NGGT totex: £1.56bn Maximum BPI penalty (2% of totex): £31.18m NGGT penalty unchanged at £26.39m.	Chapter 10 of the Core Document sets out detail on application of 2% cap
Overall	**Penalty of £26.39m**	**Chapter 10 of the Core Document**

1.12 The proposed Totex Incentive Mechanism (TIM) rate for NGET is 36.65%. Further details about TIM can be found in Chapter 10 of the Core Document.

1.13 Table 6 below summarises the financing arrangements that we are proposing to apply to NGGT. We also propose to safeguard against the risk of stranded assets by accelerating the depreciation of GT assets. We propose aligning depreciation policies for Regulated Asset Value additions from 2002 onwards such that the depreciation policy for both GT and GD is on a 45-year, front loaded basis. To implement this, we propose the backlog depreciation to be recovered over 20 years from RIIO-2.

1.14 Please refer to the RIIO-2 Draft Determinations – Regulatory Finance Annex for more detail on these areas.

Table 6: Proposed NGGT financing arrangements

Finance Parameter	Proposal	Source
Notional gearing	60%	See Table 31 in the Finance Annex
Cost of equity	4.20%	
Expected outperformance	0.25%	
Allowed return on equity	3.95%	
Allowed return on debt	1.74%	
Allowed return on capital	2.63%	

2. Quality of Service - setting outputs

Introduction

2.1 In this Chapter, we provide our views on the package of outputs for NGGT for RIIO-GT2 price control.

2.2 In our SSMD, we invited companies to propose bespoke outputs informed by the enhanced engagement process. We expected companies to support proposals with robust justification to ensure that the potential consumer benefits were reasonable, given the additional cost and/or regulatory complexity introduced into the price controls.

2.3 In making our proposals for RIIO-2 outputs, we have sought to strike a balance between these trade-offs for each bespoke output. You can find a background and our assessment approach in Chapter 4 of the Core Document. You can find details on the expected Return on Regulated Equity impact of financial incentives in Chapter 3 of the Regulatory Finance Annex.

2.4 For full details on the bespoke outputs, refer to NGGT's Business Plan submission.[6]

Common ODIs

2.5 Table 7 below summarises common ODIs that we propose will apply to NGGT in the RIIO-GT2 price control period.

Table 7: Proposed NGGT common ODIs

Output name	Output type (Financial/Reputational)
Customer satisfaction survey	Financial
Quality of demand forecast	Financial
Maintenance	Financial
Entry and exit capacity constraint management	Financial
Residual balancing	Financial
Greenhouse gas emissions (venting)	Financial
NTS shrinkage	Reputational

[6] NGGT RIIO-2 Business Plan.

Customer satisfaction survey

Customer satisfaction survey	
Purpose	A financial output delivery incentive to drive improvements in the quality of customer service through customer satisfaction surveys.
Benefits	Increased customer satisfaction, stakeholder engagement, improved service.

Background

2.6 In our SSMD,[7] we stated that we would retain the customer satisfaction element of RIIO-GT1's Stakeholder Satisfaction Output (SSO) as a symmetrical financial ODI. We stated our intention to retain a single key question that rates overall levels of satisfaction, with NGGT having the flexibility to tailor the remainder of the survey to the needs of its customers.

2.7 In addition, we stated the following:

- NGGT and its User Group should identify the range of customers that could be surveyed
- NGGT should propose a performance target based on out-turn data from RIIO-GT1
- the incentive value should be set at +/- 0.5% of Ex Ante Base Revenue.

Consultation position

Output parameter	Consultation position
Incentive design	Retain customer satisfaction survey incentive as financial incentive. Revise baseline target, incentive cap and collar and the incentive value.
Baseline target	7.8/10 of the satisfaction score survey
Incentive strength	Each incremental 0.1 performance deviation from the target is worth +/- 0.07% of annual Base Revenue
Incentive cap and collar	+/- 0.5% of Base Revenue

[7] SSMD GT Annex – Paragraphs 2.32 to 2.47.

Rationale for consultation position

Baseline performance target

2.8 We propose to set the revised performance target of 7.8/10. This is higher than RIIO-GT1 performance target of 6.9/10, which NGGT has managed to outperform in each year of RIIO-GT1 to date. It is also in excess of NGGT's average RIIO-GT1 score of 7.62/10. In light of NGGT's performance in RIIO-GT1, we consider the revised target is appropriate as it is achievable but will challenge NGGT to outperform in RIIO-GT2.

Cap and collar

2.9 We propose to set the performance cap at 8.5/10 and collar at 7.1/10. We think that this narrower range is appropriate (compared to a range of 8.5 to 6.3 in RIIO-GT1), as we consider it will be challenging to obtain average scores in excess of the proposed target in RIIO-GT2.[8]

Key question

2.10 We consider NGGT's proposed key question of "Based on your experience of (service touchpoint)[9] – on a scale of 1-10, how satisfied are you with National Grid Gas?" is an appropriate performance indicator. We think that surveying customers as they pass through different service touchpoints will enable NGGT to better identify areas for improvement to its customer service.

Incentive value

2.11 We propose the incentive value of +/- 0.5% of Base Revenue. This is in line with our SSMD decision to remove the stakeholder satisfaction element of RIIO-GT1's SSO.[10] We propose the size of the reward to be calculated linearly from zero for achieving the performance target to +/- 0.5% of Base Revenue for achieving the performance cap/collar scores.

Consultation questions

NGGTQ1. Do you agree with our proposals for the Customer Satisfaction ODI-F?

[8] In RIIO-1 to date, NGGT has only outperformed this target score on one occasion.
[9] Service touchpoints are areas where NGGT provides a specific service: Emergency planning; balancing; capacity; connections offer; connections design and build; maintenance; mod; control centre; metering; diversions; disconnections; future markets; forums; account management.
[10] RIIO-GT1 SSO has the incentive strength of +/- 1.0% of base revenue.

Quality of demand forecasts

Quality of demand forecasts	
Purpose	To encourage the SO to make improvements to the accuracy of its gas demand forecasts.
Benefits	Improved accuracy of NGGT's forecasts of gas demand to support the industry in making efficient decisions about its use of the network.

Background

2.12 NGGT has Licence and Uniform Network Code (UNC)[11] obligations to produce NTS demand forecasts for NTS users. It is currently incentivised based on the accuracy of its forecast demand on a day-ahead basis (D-1 demand forecasts) and demand forecasts two-to-five days ahead (D-2 to D-5).

2.13 In our SSMD, [12] we proposed to retain the quality of demand forecasting incentive in RIIO-GT2, with tougher targets and a lower cap.

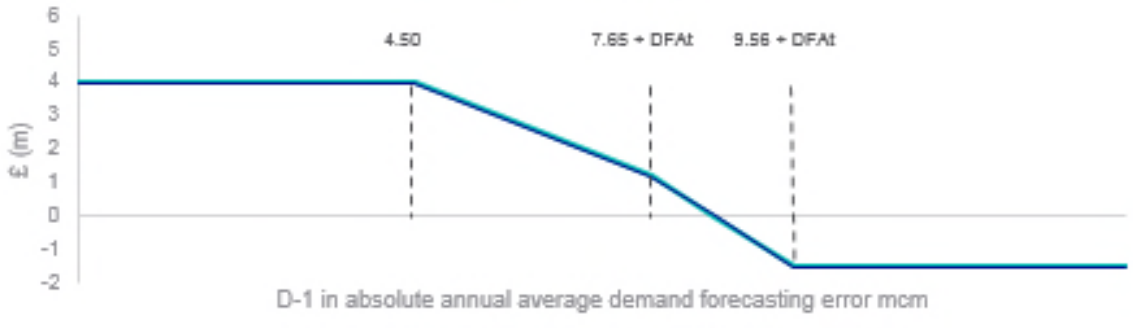
2.14 Stakeholder feedback on the value of the two schemes of the Quality of Demand Forecasting incentive was mixed. In our SSMD[13] we set out that we expect the incentive's targets and caps should reflect the incentive's consumer value, and NGGT must show evidence of the consumer benefits across the whole incentive in its Business Plan.

2.15 We also set out our intention to make this incentive reputational if NGGT could not provide evidence of consumer benefit for both D-1 and D-2 to D-5 demand forecasts.

2.16 In its Business Plan, NGGT proposed to retain both D-1 and D-2 to D-5 schemes, each with a reduced incentive rate, and a 60% reduction in both scheme caps (£4m for D-1 and £4m for D-2 to D-5). Figure 2 below illustrates NGGT's proposal for the D-1 scheme.

[11] The Uniform Network Code (UNC) is the hub around which the competitive gas industry revolves, comprising a legal and contractual framework to supply and transport gas.
[12] SSMD - GT Annex – Paragraphs 2.57 to 2.59.
[13] SSMD GT Annex – Paragraph 2.60.

Figure 2: NGGT's proposal for the RIIO-GT2 D-1 scheme[14]



2.17 NGGT also proposed a capped performance 'deadband' of 4.5mcm/d and 6.85 mcm/d for D-1 and D-2 to D-5 respectively, allowing any performance under these targets to achieve the incentive revenue cap of £4m. The breakeven targets in NGGT's Business Plan remained the same as RIIO-GT1, at 8.5 mcm/d for D-1 and 13.7mcm/d for D-2 to D-5.

2.18 NGGT requested that the Demand Forecast Storage Adjuster (DFSA) be amended to not produce a mathematically negative value, and thus cause a decline in the incentive target.

2.19 NGGT provided Ofgem with a report on consumer value and benefits of the D-1 demand forecasting incentive scheme across RIIO-GT1, and its estimated RIIO-GT2 savings to consumers.

2.20 The report estimated the benefits from the D-1 scheme based on the impact that accurate D-1 demand forecasts have on National Balancing Point (NBP)[15] prices. It provided a projection of the system cost of D-1 forecast errors in the absence of an incentive, and estimated this cost to be around £44m in RIIO-GT1 (from 2013/2014 to 2020/2021) and £62m in RIIO-GT2, ie from 2021/2022 to 2025/2026. NGGT did not provide any similar analysis on the consumer benefits from the D-2 to D-5 scheme for RIIO-GT1 or RIIO-GT2.

[14] Source: NGGT's Business Plan.
[15] The National Balancing Point is a virtual trading location for the sale and purchase and exchange of UK natural gas.

Approach to assessment

2.21 We have assessed NGGT's Quality of Demand Forecasting incentive proposal in its RIIO-GT2 Business Plan against the expectations we established in our SSMD so that we are able to draw a conclusion on the following:

- is there evidence of consumer benefit across the two demand forecasting schemes
- have stricter targets and lower caps been proposed across both D-1 and D-2 to D-5 demand forecasts
- do these proposed caps and targets reflect the benefits for consumers and challenge to improve demand forecasts beyond BAU?
- what is NGGT's expected performance against the incentive with its proposed targets, caps and collars in place?

2.22 We procured AFRY Management Consulting ('AFRY') to support our assessment of NGGT's proposal for the D-1 Demand Forecasting scheme. AFRY's report[16] is published alongside our Draft Determinations as the Quality of Demand Forecasting Annex.

Consultation position

Output parameter	Consultation position
Incentive Design	Retain the financial incentive for D-1 demand forecasts, with a lower cap (symmetrical with the collar) and a tighter target. Introduce a new Licence obligation for the SO to annually report on activities/investments conducted to improve D-1 demand forecasting. Make the incentive for D-2 to D-5 demand forecasts reputational only.
Incentive value	+/- £1.5m symmetrical cap/collar for D-1
Incentive rate	Each incremental 1 mcm/d performance deviation from the target is worth +/- £180k
Target	D-1 annual average absolute forecast error target of 8.35mcm/d with the demand forecast storage adjustment up to +1mcm/d

[16] AFRY, 'National Grid Gas's Gas Demand Forecasting Incentives: A note from AFRY Management Consulting to Ofgem', 20 December 2019.

Rationale for consultation position

Incentive cap and collar

2.23 Although NGGT proposed a significant reduction to the incentive caps, AFRY's report forecasts that based on NGGT's current level of forecast accuracy the caps of £4m would rarely, if ever, be hit in RIIO-GT2.

2.24 We propose to bring the cap for the D-1 scheme closer to NGGT's RIIO-GT1 average D-1 performance on forecast error and the revenue it earned for this. A symmetrical D-1 scheme with a cap and a collar of +/- £1.5m a year is more aligned with stakeholder feedback to make effective reductions to the maximum reward for demand forecasting and provide an incentive for NGGT to improve its performance on D-1 demand forecasting in RIIO-GT2.

D-1 performance target and incentive rate

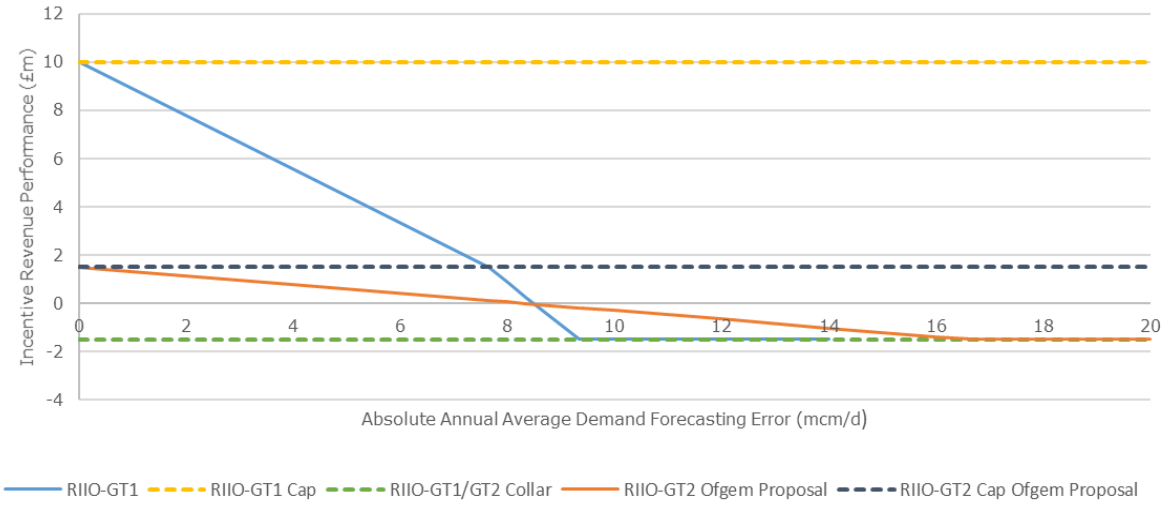
2.25 For RIIO-GT2, we propose a stricter absolute forecast error target of 8.35mcm/d per year on average for D-1 demand forecasts,[17] based on NGGT's RIIO-GT1 actual performance (see Figure 3 below).

2.26 NGGT stated that according to its proposal, a lower cap for the D-1 scheme would decrease the incentive rate and result in a lower incentive reward for NGGT in RIIO-GT2 compared to the same level of performance in RIIO-GT1. In its report however, AFRY concluded that the impact of NGGT's RIIO-GT2 proposal on NGGT's incentive revenue performance would be limited. AFRY states that assuming NGGT's best historical performance in RIIO-GT1 (7.75mcm/d achieved in RIIO-GT1 for D-1) would be repeated in RIIO-GT2, NGGT's earnings from the D-1 scheme would fall by only 2%.

2.27 We do not consider that NGGT's proposed target, or the proposed scheme design with a deadband and corresponding reduction in the D-1 scheme incentive rate, would sufficiently incentivise NGGT to improve on its RIIO-GT1 performance. Instead, we propose a lower incentive rate with no deadband.

[17] This is a reduction from the current target of 8.5mcm/d, which NGGT proposed to retain. For an average annual absolute forecast error of NGGT's best historical performance (7.75mcm/d), the reward under this proposal would be £107,790, compared to £1.32m under the RIIO-GT1 scheme.

Figure 3: Comparison of RIIO-GT1 D-1 incentive design and Ofgem's proposal for RIIO-GT2



2.28 We expect NGGT to make further improvements in its demand forecasting performance, and think a stricter target will encourage further investment activity and innovation beyond its current forecasting capability.

2.29 In line with this, we propose a new Licence obligation on NGGT for it to report annually on the activities and investments made to improve its D-1 performance.

2.30 We will continue the application of the Demand Forecast Storage Adjuster (DFSA) that allows the D-1 target to be increased by a maximum of 1mcm/d. The DFSA methodology will be amended for the RIIO-GT2 period so that a mathematically negative value cannot be produced within the algebraic formula.

D-2 to D-5 demand forecasts

2.31 We propose that D-2 to D-5 demand forecasts should be reputational only because there is no clear evidence of consumer value from the D-2 to D-5 scheme in RIIO-GT1. NGGT's RIIO-GT2 Business Plan provided little evidence of the benefit, value, or usage of the D-2 to D-5 demand forecasts. AFRY's report stated customers saw D-1 forecasting as more important to them than D-2 to D-5, despite the fact that NGGT earned more in incentive revenue in RIIO-GT1 from its D-2 to D-5 forecasting performance.

2.32 We expect NGGT to continue to record and report on the accuracy of its D-2 to D-5 forecasts. We propose to include a Licence obligation on NGGT to report

annually on its D-2 to D-5 demand forecasting, and the average annual absolute forecasting error.

Consultation questions

NGGTQ2. Do you agree with our proposals for the Quality of Demand Forecasting incentive?

Maintenance

Maintenance	
Purpose	To incentivise the SO in efficient planning of network maintenance at direct exit connections from the NTS.
Benefits	Minimised impact of maintenance work on NGGT's customers and minimised disruption to customer operations.

Background

2.33 NGGT undertakes periodic maintenance work to ensure the safe, reliable and economical functioning of the network. This maintenance involves some outages which reduce the flexibility of the network and which may have an impact on connected parties.

2.34 The Maintenance incentive was developed in RIIO-GT1 to encourage efficient planning and execution of maintenance work, which is performed periodically from April to September each year. The Maintenance incentive is split into two scheme components. The components include incentivising minimisation of the use of Maintenance Days ('MDs')[18] to perform Remote Valve Operations ('RVO') maintenance ('Use of Days Scheme for RVO Work'), and minimisation of changes initiated by NGGT to the agreed maintenance plan ('Changes Scheme').[19]

2.35 In our SSMD,[20] we decided to retain both schemes within the Maintenance incentive, and to make the financial incentive downside only.

2.36 We requested that NGGT propose revised, tougher, targets for the RIIO-GT2 price control period. We set out our expectation that the new downside-only schemes of this incentive would have collars the same or lower than those in place for the

[18] A Maintenance Day refers to a day of maintenance which impacts upon a customer.
[19] The schemes have been fully active since 2016/17. Both schemes were reviewed by Ofgem in 2018.
[20] SSMD GT Annex – Paragraphs 2.72 to 2.76.

current incentive, and that any proposed changes to these collars needed to be fully justified.

2.37 In its RIIO-GT2 Business Plan, NGGT proposed to retain the two existing schemes of the Maintenance Incentive as in RIIO-GT1, without any changes to the collars, caps or the targets. NGGT stated that it expects the volume of maintenance in RIIO-GT2 to increase by two to three times compared to the volume of maintenance during RIIO-GT1.

2.38 NGGT also proposed to widen the Maintenance incentive to align other non-RVO types of maintenance works to customer maintenance outages.

Approach to assessment

2.39 We have assessed NGGT's Business Plan proposal for the Maintenance incentive against the requirements specified in our SSMD so that we are able to draw a conclusion on the following:

- is the RIIO-GT2 proposal for the Maintenance incentive robust and well justified? Does it set targets that are likely to drive behavioural change in NGGT's operations and lead to consumer benefits without resulting in unjustified rewards for NGGT?
- should there continue to be an upside for the two existing schemes of the Maintenance incentive?
- is it appropriate to widen the scope of the Maintenance incentive to include the non-RVO maintenance activities as proposed by NGGT?

2.40 AFRY have supported our assessment of NGGT's proposal for the Maintenance incentive in RIIO-GT2. In particular, we asked AFRY to consider the robustness of the evidence provided with regard to the volume of work (which NGGT forecasts to increase) in the RIIO-GT2 maintenance plan, the justification for widening the scope of this incentive and the expected performance in RIIO-GT2. AFRY's report is published alongside our Draft Determinations as Maintenance Annex.[21]

[21] AFRY, 'Maintenance incentive – Final Report', March 2020.

Consultation position

Output parameter	Consultation position
Incentive design	Three schemes: Use of Days for RVO Work, Changes Scheme and Use of Days for Non-RVO Work.
Incentive value	Downside only financial incentive with a collar of -£500k for each scheme (-£1.5m in total).
Incentive rate	A stepped incentive with tiered payments/penalties per change under the Use of Days for RVO Work scheme, and a payment/penalty of £50k per each change day below/above the target under the Changes Scheme and Use of Days for Non-RVO Work.
Target	11 days for the Use of Days for RVO Works Scheme 7.25% for the Changes Scheme 75% alignment for the Use of Days for Non-RVO Work Scheme

Rationale for consultation position

2.41 We acknowledge NGGT's improved performance in aligning its maintenance activities and the value this incentive has brought to NGGT's customers so far. For this reason we propose to accept aspects of NGGT's proposal for the Maintenance incentive, including the targets and collars for the Use of Days for RVO Work Scheme; the Changes Scheme; and the Use of Days for non-RVO Work Scheme. However, consistent with SSMD and recognising that the current level of performance has become business as usual, we propose to make the incentive downside only incentive , with a combined collar of -£1.5m a year in total (ie -£500k per scheme a year each).

2.42 In its Business Plan, NGGT set out that it expects the scheduling of the maintenance work will become more congested and therefore it will be more challenged to perform well against the Maintenance Incentive.

2.43 While it may be reasonable to anticipate an increase in maintenance activity due to ageing assets in the future, NGGT provided no supporting evidence that this would be the case. In particular, no evidence has been provided that the Use of Days for RVO Work Scheme will become harder to achieve. We also note that NGGT has already been facing the challenge of an increasing number of maintenance days in RIIO-GT1 and continued to consistently outperform on the two existing schemes of the Maintenance Incentive.

2.44 Moreover, AFRY predicted that under the current RIIO-GT2 proposal for the Use of Days for RVO Work Scheme, NGGT would continue to outperform against the current target and achieve incentive payments towards the scheme's cap. In

terms of the Changes Scheme, there is no supporting evidence in NGGT's Business Plan that continuation of the current target methodology would stretch NGGT relative to BAU.

2.45 We consider that retaining the two schemes of the Maintenance incentive but making them financial penalty-only schemes will avoid further rewarding activities which are BAU and already funded via the price control. Considering NGGT's expectation that maintenance activities will increase in RIIO-GT2, we accept NGGT's proposal to maintain the RIIO-GT1 targets for the RIIO-GT2 regulatory period.

2.46 NGGT noted that the existing incentive currently only covers a small proportion of its maintenance plan.[22] It proposed that the scheme be extended to align other non-RVO types of maintenance works to customer outages ('Use of Days for non-RVO Work'), ie in-line inspection ('ILI') runs and 'other works' (eg defect inspections).

2.47 Following further discussions, NGGT provided a detailed breakdown of the non-RVO maintenance activities, ILI runs versus other works, and its performance aligning these works to customer outages in RIIO-GT1 to date (inclusive of regulatory year 2018/2019). Data provided shows that on average, since 2016/2017, NGGT outperformed on the target it proposed in its Business Plan. While there appears to be room for improvement in alignment of maintenance days for ILI runs, these represent a small proportion of all non-RVO maintenance days. In our view, this does not justify a financial upside to the incentive, as proposed by NGGT.

Consultation questions

NGGTQ3. Do you agree with our proposals for the Maintenance incentive?

Entry and exit capacity constraint management (CCM)

Entry and exit capacity constraint management (CCM)	
Purpose	To deliver an efficient overall cost of SO constraint management actions, and encourage balanced risk versus reward decisions in the release of additional capacity.
Benefits	Lower overall costs of constraint management actions.

[22] NGGT's high level estimate for non-RVO maintenance suggested that, in a typical year under RIIO-GT2, it will approximately double.

Background

2.48 The Entry and Exit Capacity Constraint Management incentive (CCM) was designed to minimise the cost of constraints in the NTS against a target, as well as to encourage the release of additional capacity.

2.49 In our SSMD,[23] we decided to defer our decision on the CCM incentive. We asked NGGT to provide further evidence to demonstrate that the incentive provides value for money to consumers. We set out our expectations on NGGT to explain how this incentive could be better designed to drive consumer benefits, including challenging targets, which are reflective of constraint risks and costs, without resulting in unjustified rewards for NGGT.

2.50 In its RIIO-GT2 Business Plan, NGGT proposed:

- to retain a modified version of the RIIO-GT1 CCM incentive with the average annual cost target of £22.1m (in 2018/19 prices) for the RIIO-GT2 price control period
- a smaller cap and collar range of +/- £20m
- to remove some specific revenues associated with non-firm capacity products from the performance measure
- a re-opener to review the parameters of the scheme in case either the cap or the collar is hit two years in a row.

2.51 NGGT argued that the CCM incentive scheme is integral to the way in which NGGT make capacity available on the NTS (the GB access regime). Under the access regime, NGGT is obliged to release levels of capacity more than double the peak demand on both entry and exit, taking on the network risk on behalf of its customers and stakeholders.[24] NGGT argued that the CCM incentive scheme should continue to recognise this.

Approach to assessment

2.52 As part of our assessment of NGGT's proposal for the CCM incentive, we considered the following questions:

[23] Paragraphs 2.98-2.104 in SSMD - GT Annex – Paragraphs 2.98-2.104.
[24] In reality, NGGT is unlikely going to have to comply with this obligation as demand never reaches such high levels.

- has the RIIO-GT1 CCM incentive delivered value to consumers? If so, is it likely to continue to do so in RIIO-GT2?
- is the proposed RIIO-GT2 CCM incentive robust and well-justified?
- does the proposed RIIO-GT2 CCM incentive include challenging targets that are reflective of constraint risks and cost? Are these proposed targets likely to drive consumer benefits without resulting in unjustified rewards for NGGT?

2.53 We asked AFRY to support us in our assessment, in particular to review the evidence provided in the RIIO-GT2 proposal for the CCM incentive. AFRY's report is published alongside our Draft Determinations as CCM Annex.

Consultation position

Output parameter	Consultation position
Scheme design	Revenue from the overrun charges and the sale of interruptible capacity no longer feed into the CCM incentive
Baseline target	£0.2m per year
Financial cap/collar	+/- £3.2m per year
Incentive rate	20%[25]

Rationale for our consultation position

Concerns about the target and our counterproposal for the CCM Incentive

2.54 We are not persuaded by NGGT's arguments regarding the robustness and validity of its forecast constraint costs and its proposed RIIO-GT2 CCM Incentive target. There is a significant risk that these costs and the target are overstated, and adopting them as proposed would not be in the interests of consumers.

2.55 NGGT expects an increase in the risk of constraints in RIIO-GT2. It believes that constraint management will become operationally more challenging due to NGGT supporting the energy system transition, managing demand intermittency, the changing demand and supply patterns within and between days, and ageing assets with increasing maintenance needs.[26] However, NGGT has not provided convincing evidence that constraint costs in the future are likely to be higher than they have been during the RIIO-GT1 period so far.

[25] This means that NGGT would earn a reward of 20% of the net underspend against the CCM target (taking account of constraint costs and applicable revenue), and similarly would be exposed to 20% of the net overspend against the CCM target.
[26] NGGT estimates the proposed maintenance plan is set to be between two and three times greater in RIIO-GT2 than in RIIO-GT1.

2.56 We understand that NGGT's target was developed in two steps. In step 1, NGGT carried out detailed modelling to forecast the volume of constraints and associated costs as part of the Network Capability Assessment ('NCA'). The NCA process was used by NGGT to determine both necessary investment responses (where reinforcement is less costly than commercial constraint actions) as well as to forecast the target level of constraint costs in the proposed RIIO-GT2 CCM incentive. Drawing on the NCA, NGGT predicted that there would be 16 constraint events per year in RIIO-GT2 with the total average annual associated cost of £47.6m. This is a "raw" constraint cost forecast that does not take account of active network and system management actions that NGGT would undertake as business as usual actions as an efficient SO.

2.57 In step 2, NGGT corrected the raw forecast constraint cost from the NCA to take explicit account of business as usual constraint risk management activities. This resulted in the cost forecast being revised downwards to £22.1m per year on average, which NGGT propose as the target for the incentive scheme.

2.58 AFRY concluded that the NCA results are dependent on underlying network analysis assumptions (eg relating to pressure and within-day flow patterns) and these may understate actual network capability and overstate the number of constraints, and the volumes and costs of these constraints. AFRY also concluded that using different assumptions could integrate BAU into the process, negating the requirement to cover it in step 2.

2.59 In relation to Step 2, AFRY expressed concern about the adjustments made by NGGT to the NCA outputs to reflect BAU actions. In particular, AFRY stated that "it is important to note that different underlying assumptions, which reflect typical operational practice and BAU and which are reasonable and justifiable, would be expected to significantly reduce the forecast. This would reduce the number of constraint events forecast, as well as reduce their magnitude and hence the resultant forecast of costs." AFRY concluded that the proposed CCM incentive target is unreliable and unjustified.

2.60 In order for the CCM incentive to work and deliver benefits to consumers, it is important that there is confidence in the way the CCM target has been set, and that the target challenges NGGT to improve its behaviour and leads to long-term operational improvements. For the reasons set out above, we think that NGGT's proposed CCM incentive target is insufficiently robust and is therefore not justified.

2.61 In the absence of reliable forecasts of the constraint costs from NGGT, we think that the best available evidence on future constraint costs is provided by looking at actual constraint costs incurred in recent years. Data provided by NGGT show that in the RIIO-GT1 period to 2018/2019, actual constraint management costs have been £0.2m per year.

2.62 We intend to use this figure of £0.2m per year as the annual target for the CCM incentive.

2.63 In its RIIO-GT2 Business Plan, NGGT also proposed to retain the existing cost and revenue components of the scheme, but proposed to remove the applicable proportion of interruptible / off-peak capacity revenue from the scheme where NGGT scale back[27] capacity. We agree with the proposed change to remove these revenues from the scheme in these circumstances. We have also concluded that the largest component of the CCM incentive revenue, ie revenue from the system entry overrun charges, should be removed from the scheme as this rewards NGGT for events not under its control.

2.64 The inclusion of system entry overrun charges in the scheme is motivated by the understanding that shippers overrunning could increase the likelihood of constraints (and hence constraint management actions). However, analysis shows that the revenue appears to result from shippers' errors rather than resulting from specific actions taken by NGGT to maximise the revenue from the overrun charges when managing constraints. NGGT should not be financially rewarded for shippers' errors.

2.65 We recognise that there is some uncertainty about future constraint costs, and that the reduced scheme target (compared to RIIO-GT1) means that there is a re-balancing of risk from consumers to NGGT. However, the data about the actual number of constraints and their costs in recent years show that the scheme target in RIIO-GT1 was generous to NGGT, and this re-balancing corrects that to create a fairer allocation of risk between consumers and NGGT. Furthermore, the lower target provides NGGT with sufficient financial incentive to carry out its activities efficiently, while the retention of the remaining revenue elements of the scheme provides NGGT with a continued opportunity for upside rewards.

[27] This means that NGGT restrict the quantity of interruptible / off-peak capacity made available in order to manage constraints.

2.66 Nevertheless, we propose to apply a much narrower cap and collar range in RIIO-GT2 to offer protection to both NGGT and consumers. Our proposal is for a symmetrical upside and downside cap and collar of +/- £3.2m for NGGT's share of costs and revenues. This range was estimated based on our analysis of the maximum downside and upside financial impacts on NGGT under different plausible scenarios.

2.67 We also propose to apply a lower incentive rate of 20%. This means that NGGT would earn a reward of 20% of the net underspend against the CCM target (taking account of constraint costs and applicable revenue), and similarly would be exposed to 20% of the net overspend against the CCM target.

2.68 Our proposed scheme parameters provide NGGT with an incentive to efficiently manage constraint costs and the release of additional capacity, while offering a more equitable balance of risk versus reward.

2.69 The scheme is designed to run for the full period of the price control and we do not believe that there is justification for a re-opener.

Consumer value from the CCM incentive in RIIO-GT1 and RIIO-GT2

2.70 NGGT's proposal included an estimate of the consumer value of NGGT's proposed CCM incentive. Over the RIIO-GT1 period, the CCM incentive is estimated to have led to consumer benefits of between -£60m and £37m. Over the RIIO-GT2 period, consumer value from NGGT's proposed incentive was estimated to be between -£9m and £111m.

2.71 We asked AFRY to opine on these assumptions and conclusions. We agree with AFRY's findings that the evidence submitted by NGGT has not demonstrated that the existing CCM incentive scheme delivered clear consumer value in RIIO-GT1 nor that, with the parameters proposed by NGGT, it will deliver the consumer benefits claimed in the RIIO-GT2 period.

<u>Consultation questions</u>

NGGTQ4. Do you agree with our proposals for the CCM incentive?

Residual balancing

Residual balancing	
Purpose	To incentivise the residual balancing of supply and demand of the SO while minimising the impact of any actions on market prices.
Benefits	A more balanced supply and demand with minimised impact on market prices and cost to consumers.

Background

2.72 NGGT is required to perform residual balancing actions on the system and to operate within safe operational limits. We set a financial incentive to encourage NGGT to do this in a way that causes least disruption to the gas market. The incentive contains two elements: the Price Performance Measure (PPM) and the Linepack Performance Measure (LPM).

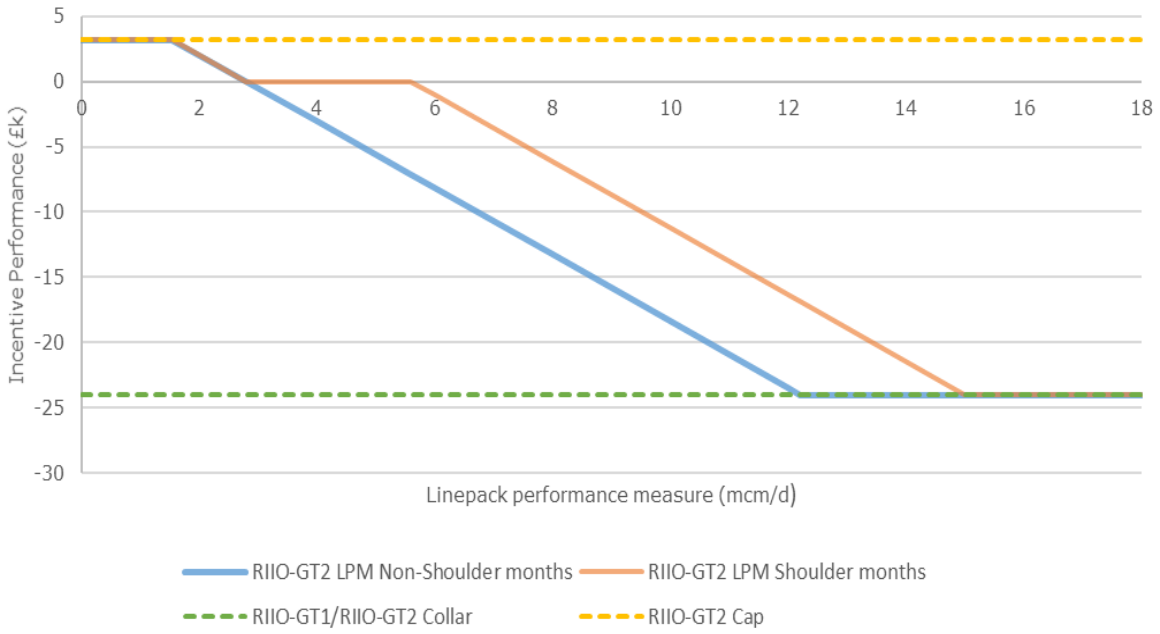
2.73 In our SSMD, [28] we proposed to retain both elements of the incentive, with the expectation that NGGT would propose revised targets. This was in line with support for the residual balancing incentive and its principles expressed previously by the majority of stakeholders.

2.74 NGGT proposed to retain the scheme, with a 20% reduction of the cap and collar, and a reduced performance gradient, to make the incentive tougher to perform against.

2.75 In its Business Plan, NGGT proposed to retain the RIIO-GT1 baseline targets for the PPM of 1.5% within the on-the-day gas System Average Price (SAP), and 2.8mcm/d for the LPM (during the non-shoulder months). NGGT also proposed a wider LPM target for the shoulder months (March and April, September and October) from 2.8mcm/d to 5.6mcm/d, to align with seasonally moving linepack and operational reality. Figure 4 below illustrates NGGT's proposal for the RIIO-GT2 LPM scheme:

[28] SSMD GT Annex – Paragraphs 2.114-2.117.

Figure 4: NGGT's proposal for the RIIO-GT2 LPM scheme for the shoulder and non-shoulder months[29]



Approach to assessment

2.76 We have assessed NGGT's Business against the requirements specified in our SSMD so that we are able to draw a conclusion on the following:

- has NGGT set out an appropriate revised proposal for LPM and PPM, including lower caps and collars?
- has NGGT proposed appropriate amendments to the LPM? Are any amendments well evidenced?

2.77 We asked NGGT supplementary questions to support our assessment of the residual balancing incentive proposal.

[29] Source: NGGT's Business Plan.

Consultation position

Output parameter	Consultation position
Incentive design	Retain both PPM and LPM elements of the scheme, with a performance range (2.8mcm/d to 5.6mcm/d) within which no incentive would apply for the LPM mechanism during the shoulder months.
Incentive value	£1.6m/-£2.8m across both schemes
Incentive rate	A stepped incentive with tiered daily payments up to £1.2k (PPM scheme) and £3.2k (LPM scheme) and penalties down to -£24k for performance against the PPM and LPM targets.
Baseline Target	PPM: 1.5% of SAP LPM: 2.8mcm/d (non-shoulder months) and 5.6mcm/d with a 2.8mcm/d to 5.6mcm/d zero performance dead-band (shoulder months)

Rationale for consultation position

2.78 Ofgem and stakeholders appreciate the value of this incentive to the market. We recognise that in the recent years, NGGT had to step up its residual balancing activities to provide the same level of service as at the start of RIIO-GT1 because of the increasing imbalance issues.

2.79 We propose to accept NGGT's proposal and retain both PPM and LPM elements of the scheme, including a performance range (2.8mcm/d to 5.6mcm/d) within which no incentive would apply for the LPM mechanism during the shoulder months .[30]

Cap and collar

2.80 NGGT proposes to reduce the overall incentive cap and collar by 20% to £1.6m and -£2.8m respectively. The 20% reduction is also reflected in the daily incentive performance against this incentive across the linepack and price performance measures (LPM and PPM).

2.81 We agree with stakeholders that NGGT's proposal reflects NGGT taking on the challenge to deliver more for consumers with a lower reward.

LPM and PPM targets

2.82 We propose to retain the baseline targets of 1.5% for the PPM, and 2.8mcm/d for the LPM for the non-shoulder months. NGGT proposed to widen the LPM target in the shoulder months from 2.8mcm/d to 5.6mcm/d, to align with seasonality and

[30] March, April, September and October.

the operational realities of the NTS. We queried with NGGT as to how the linepack would be balanced differently during the shoulder months and the impact on NGGT's performance.

2.83 Following further discussions, NGGT proposed a refined LPM arrangement of a performance range (2.8mcm/d to 5.6mcm/d) within which no incentive would apply for the LPM mechanism during the shoulder months (see Figure 4 above). We agree with NGGT's refined LPM proposal to have performance range (2.8mcm/d to 5.6mcm/d) within which no reward/penalty would apply during the shoulder months (see Figure 4). In our view, this will incentivise more efficient linepack operation from summer to winter and vice versa. We also consider this is aligns with the operational realities of the NTS, while not rewarding behaviour that falls below the baseline target for the non-shoulder months.

2.84 In light of the proposed lower caps, collars and incentive rate, coupled with stakeholder feedback, we believe it is appropriate to retain the current PPM and LPM (non-shoulder months) targets.

Consultation questions

NGGTQ5. Do you agree with our proposals for the Residual Balancing incentive?

Greenhouse Gas (GHG) emissions

Greenhouse Gas (GHG) emissions	
Purpose	To encourage the SO to consider environmental impacts when making decisions about venting from NTS compressors.
Benefits	Reduced environmental impact from compressor venting.

Background

2.85 The GHG Emissions scheme incentivises NGGT to take the cost of GHG emissions into account when deciding whether to depressurise compressor units or to keep units on standby.

2.86 In our SSMD,[31] we made the decision to continue the downside-only incentive based on the current design following the review of this incentive in 2018.

[31] SSMD - GT Annex – Paragraphs 3.68 to 3.72

2.87 In its Business Plan, NGGT proposed to retain the scheme, with more penal rates and an upside, forming part of a symmetrical cap and collar incentive design of +/- £1.5m to encourage further performance improvements. NGGT proposed to maintain the current target level of 2,897 tonnes, and update the natural gas to CO_2 venting equivalent factor from 21 to 25 in line with European standards.

Approach to assessment

2.88 We have assessed the Business Plan proposal for the GHG Emissions incentive against the requirements specified in our SSMD so that we are able to draw a conclusion on the following:

- is NGGT's proposal for the GHG Emissions incentive robust, with stretching targets? Does the incentive provide demonstrable consumer benefits without leading to disproportionate reward for NGGT?
- should the incentive continue to be downside only, be reputational or would the inclusion of an upside provide a step-change in NGGT's behaviour?

2.89 We asked NGGT supplementary questions directly related to the GHG emissions incentive to support our analysis of its proposal.

Consultation position

Output parameter	Consultation position
Incentive design	Symmetrical financial incentive
Incentive cap/floor	+/- £1.5m
Target	2,897 tonnes of CO_2 per year
Incentive rate	A reward/penalty of approx. £1.7k for every tonne vented below/above target up to the incentive cap/floor.

Rationale for consultation position

2.90 We believe NGGT's proposal for the GHG emissions incentive will encourage NGGT to deliver further improvements on its compressor venting, which will speed up the process of reducing environmental impact from compressor venting and reduce targeted GHG emissions. We, therefore, propose to accept NGGT's proposals for the GHG emissions incentive.

2.91 Following publication of our SSMD, the government passed legislation in June 2019 to reduce all greenhouse gas emissions to net zero by 2050. Ofgem published its Decarbonisation Action Plan in February 2020, setting out the next

steps to develop actions to achieve net zero with consumers at the heart. This commitment to further environmental action through legislation justifies a change from our SSMD position.

Upside on GHG emissions incentive

2.92 We believe the inclusion of a financial upside is justified to motivate NGGT to reduce GHG emissions from compressor venting and deliver further improvements on managing its venting of emissions, in line with achieving the government's Net Zero targets. There is potential for increased innovation and investment activity in this space that could become a greater focus with an upside on this GHG emissions incentive.

The target

2.93 We agree with NGGT's proposed target of 2,897 tonnes with the updated venting equivalent factor (VF) of 25. This would mean that for every tonne vented above the target, NGGT is penalised approximately £1.7k (using the non-traded carbon price of £67.95 per tonne of CO2) compared to £1.48k per tonne in RIIO-GT1.

2.94 We see the value in the incentive target being connected to the BEIS non-traded carbon price, and in increasing the venting equivalent factor from 21 to 25. Increasing the VF rate will allow NGGT to receive a higher potential reward, but the higher conversion rate will also expose NGGT to higher penalties if it underperforms on the incentive.

Cap and collar indexed to Venting Incentive Reference Price (VIRP)

2.95 We agree with proposed symmetrical cap and collar of +/- £1.5m.

2.96 Following further discussions, NGGT proposed that the cap and collar should also increase year on year consistent with the annual increase of the Venting Incentive Reference Price (VIRP) annual increase,[32] with the incentive's cap and collar being indexed to increases in the VIRP. However, as NGGT did not provide any justification for this, we propose to apply the cap and collar of +/- £1.5m without indexing it to the VIRP.

[32] The VIRP is calculated as the BEIS non-traded carbon price (with an adjustment for inflation) multiplied by the VF, with the VF being 25 across RIIO-GT2.

Consultation Questions

NGGTQ6. Do you agree with our proposals for the GHG emissions incentive?

NTS shrinkage

NTS shrinkage	
Purpose	To incentivise the SO in efficient procurement and management of own use gas and electricity for the operation of compressors and energy that cannot be billed.
Benefits	Reduced cost and amount of shrinkage on the NTS.

Background

2.97 Shrinkage describes the energy that 'shrinks' in the operation of the gas network. The NTS Shrinkage incentive aims to reduce both the cost and amount of shrinkage on the NTS. The incentive is comprised of three components:[33]

- Compressor Fuel Use ('CFU'): The energy (electricity and gas) used to run compressors to transport gas through the NTS
- Calorific Value Shrinkage ('CVS'): The energy which cannot be billed due to the provisions of the Gas (Calculation of Thermal Energy) Regulations 1996
- Unaccounted for Gas ('UAG'): The quantity of gas that is lost from the NTS and is attributable to metering errors.

2.98 In our SSMD,[34] we decided to remove the CFU element from the Shrinkage incentive because NGGT has limited control over CFU. We also expressed our view that NGGT should not continue to be incentivised for the two smaller components of this incentive - UAG and CV shrinkage - unless it was able to demonstrate that the two elements are within its control and have provided value for money to consumers during RIIO-GT1.

2.99 In its RIIO-GT2 Business Plan, NGGT proposed to retain the NTS Shrinkage incentive but with reduced caps and collars. NGGT proposed to add access to seasonal products to deliver additional consumer savings for RIIO-GT2, as well as

[33] Typically, CVS accounts for a very small share of shrinkage volume, at around 1% over RIIO-GT1 to date (including regulatory year 2018/19). CFU and UAG volumes have been roughly equal at 46% and 53% of shrinkage, although there is a large variance from year to year, with CFU's share of shrinkage volumes ranging between 34% and 74%, and UAG in the range of 24% to 65%.
[34] SSMD GT Annex - Paragraphs 3.84 to 3.86.

– subject to proposed changes to the electricity charging regime - to remove the TNUoS element from the incentive.

Approach to assessment

2.100 We have assessed NGGT's Business Plan for the NTS Shrinkage incentive against the requirements specified in our SSMD so that we are able to draw a conclusion on the following:

- has the NTS Shrinkage Incentive delivered value to consumers so far in RIIO-GT1?
- has NGGT demonstrated that the two smaller components of the NTS Shrinkage incentive - UAG and CVS–are under its control?
- should NGGT continue to be financially rewarded for NTS Shrinkage?

2.101 We have asked AFRY to support us in our assessment, in particular to test if a) the CFU data shows that there is value in incentivising the CFU element, b) the target could be dispensed with; and c) if relying on the market price[35] for the UAG and CVS elements would be more in consumers' interest than current arrangements. AFRY's report is published alongside our Draft Determinations as NTS Shrinkage Annex.

Consultation position

Output parameter	Consultation position
Incentive Design	Retain as a reputational only incentive with a simplified design.

Rationale for consultation position

2.102 We disagree with NGGT's proposal to financially incentivise volume reductions of shrinkage, as it is extremely difficult to predict what a reasonable baseline is and it may not be clear how much of the variation against a baseline/target is attributable to concrete actions by NGGT. We conclude that there is little value for consumers from a financial incentive for NGGT to make efforts to minimise expected costs and associated risk when procuring shrinkage energy on a day-to-day basis.

[35] Means price paid for shrinkage energy procured on the day and would typically include gas procured on Within Day and Day Ahead market. Also referred to as 'cash-out' or 'prompt' market price on the day' elsewhere in the document.

2.103 We propose to simplify the design of this incentive by removing the performance measure against the target. We propose to make the incentive reputational only and to introduce Licence Obligations on NGGT to report on the costs of procured energy compared to 'perfect foresight' and 'pure on the day' purchases scenarios. We also propose to introduce a Licence Obligation on NGGT to investigate the causes of UAG and CVS on a regular basis and to improve on metering and inspection activities.

Consumer value from the procurement cost element of the NTS Shrinkage incentive

2.104 In its Business Plan, NGGT equates consumer value from the NTS Shrinkage incentive in RIIO-GT1 with its performance against the target. It states that, to date in RIIO-GT1 (inclusive of 2018/2019), the overall NTS shrinkage costs have been £70.9m less than target and that £40.2m of the incentive costs have been returned to NTS users. On one day alone (1 March 2018, ie Beast from the East), NGGT estimates that consumer exposure would have been £9m instead of approximately £1.1m if it procured energy shrinkage on the day and the costs had been passed to consumers.

2.105 We agree that the procurement cost element of the NTS Shrinkage incentive protects consumers from price risk on days with higher demand and/or lower supply than expected, in particular on days of extreme weather conditions. However, as shown by NGGT in the supplementary information provided, over the RIIO-GT1 period to date (ie inclusive of regulatory year 2018/2019), consumers would have been better off had NGGT procured NTS Shrinkage gas on the day (ie cash-out value).[36]

2.106 We have asked AFRY to model the value at risk for all three components and to conclude as to the risk at stake, should NGGT have to rely on cash-out (prompt) prices. AFRY estimates the value at risk for all three components of NTS Shrinkage to be approximately £10m-£20m. However, according to AFRY, if NGGT procured shrinkage energy at market prices on the day, this risk would not be expected to materialise except in very rare circumstances, such as in the event of extreme weather conditions similar to the Beast from the East, that lead to very high prompt prices on the day.

[36] According to NGGT, the NTS Shrinkage Incentive delivered additional value to consumers through NGGT taking on and managing price risk on behalf of consumers.

2.107 On the basis that NGGT is under a statutory duty under section 9 of the Gas Act 1986 to develop and maintain an efficient and economical pipeline system for the conveyance of gas, we would expect NGGT to – among other things - efficiently procure the energy required for running its network and to procure shrinkage energy through forward markets as appropriate.

2.108 On this basis we conclude that there is little value for consumers from a financial incentive for NGGT to make efforts to minimise expected costs and associated risk when procuring shrinkage energy and we therefore propose to make the NTS Shrinkage incentive a reputational only incentive. We expect NGGT to continue to efficiently procure the energy required for running its network and to report to us the actual annual costs incurred compared to the 'perfect foresight' and 'pure on the day' purchases scenarios.

Degree of controllability over shrinkage volumes

2.109 In its Business Plan, NGGT acknowledged its limited ability to control the volumes of shrinkage, especially since the UAG and CVS volume components are restricted by potential errors in data and tolerance of existing meters. We note that NGGT's control over the CFU component of the NTS Shrinkage incentive is limited by flow patterns (LNG supplies, St Fergus flows) and network constraints that affect compressor running hours, as well as environmental regulations that NGGT needs to comply with when running compressors.[37]

2.110 We agree with AFRY's conclusions that it may not be appropriate to financially incentivise volume reductions of shrinkage, as it is extremely difficult to predict what a reasonable baseline is. In addition, it may not be clear how much of the variation against a baseline/target is attributable to concrete actions by NGGT.

2.111 We would expect NGGT to continue to control the volumes of shrinkage where it is able. Further, considering the sizeable proportion of shrinkage energy due to gas losses, we propose to require NGGT to regularly investigate the causes for UAG and CVS and to improve on metering/inspection activities.

The target

2.112 NGGT proposed that the shrinkage methodology is reviewed and consulted upon with stakeholders prior to RIIO-GT2 to ensure that it provides a robust and transparent model for setting targets. However, NGGT does not specify what

[37] See Chapter 3 for more details.

would make the target-setting more transparent and the methodology more robust.

2.113 AFRY noted that the methodology that underpins the calculation of the CFU forecast volumes in the NTS Shrinkage Methodology Statement may need to change given the changing nature of network flow patterns and is therefore less reliable as the basis for an incentive target. AFRY finds that the current methodology is questionable and has not been justified in NGGT's Business Plan.

2.114 We do not think that NGGT's proposed additions to the NTS Shrinkage methodology target will make the target-setting process more robust. Accordingly, we propose to dispense with the target and the methodology that underpins the calculation of the target as set out in the NTS Shrinkage Methodology Statement.

Consultation questions

NGGTQ7. Do you agree with out proposals for the NTS Shrinkage incentive

Bespoke ODIs

2.115 Table 8 below summarises the bespoke ODI proposals that NGGT submitted in its Business Plan. It also outlines our consultation position in relation to each of those proposals, signposting where to find additional detail on accepted proposals and outlining our rationale for rejecting other proposals.

Table 8: Proposed NGGT bespoke ODIs

Output name and description	Consultation position
Environmental: NGGT proposed an ODI-F to reward/penalise its performance in seven environmental areas.	**Accept:** We propose to accept this bespoke output. Our rationale follows this table in paragraphs 2.116 – 2.125 below.
Stakeholder satisfaction: NGGT proposed an ODI-R to gauge stakeholders' satisfaction with its performance.	**Accept:** We propose to accept this bespoke output. Our rationale follows this table in paragraphs 2.126 – 2.129 below.
Quality of Community Engagement: NGGT proposed an ODI-R on the quality of its engagement with communities and community representatives before, during, and after construction.	**Reject:** We welcome NGGT's ambition to minimise its impact on communities affected by construction. However, we found insufficient justification of the consumer value for an ODI additional to the Stakeholder Satisfaction ODI. We propose surveying stakeholders affected by construction as part of the Stakeholder Satisfaction ODI.
Business Carbon Footprint (BCF): NGGT proposed an ODI-R to report annually on its BCF.	**Reject:** We propose that NGGT reports on its BCF under the existing RIIO-GT2 Licence obligation to publish the Annual Environmental Report. Therefore, we do not consider it necessary to set an additional reputational ODI in this area.
Operating margins: NGGT proposed an ODI-R to report the costs of the operating margin gas required to maintain system pressure in times of stress.	**Reject:** We propose that NGGT reports on its operating margin gas costs under the existing RIIO-GT2 Licence obligation.[38] Therefore, we do not consider it necessary to set an additional reputational ODI in this area.
Unaccounted for gas (UAG): NGGT proposed an ODI-R to undertake activity to reduce the sources of UAG and publish UAG reports.	**Reject:** NGGT currently has a Licence obligation to publish a UAG report every six months.[39] We propose to introduce a Licence obligation on NGGT to investigate the causes of UAG on a regular basis. Therefore, we do not consider it necessary to set an additional reputational ODI in this area.
Data provision: NGGT proposed an ODI-R for reporting on the information it provides to the industry.	**Reject:** NGGT currently has a Licence obligation to publish reports on the information it provides to help the industry, such as the Winter Outlook, annual maintenance plan and GFOP.

[38] Special Licence Condition 8C.
[39] Special Licence Condition 8E.

Output name and description	Consultation position
	We welcome the actions NGGT takes in providing data to wider industry and will retain the Licence obligation. We do not consider it necessary to set an additional reputational ODI in this area.

Consultation questions

NGGTQ8. Do you agree with our proposals on the bespoke ODIs? If no, please outline why.

Environmental incentive

Environmental incentive	
Purpose	To incentivise NGGT to outperform the baseline improvement targets in its Environmental Action Plan.
Benefits	Reduced carbon emissions, improved natural environment and reduced resource.

Background

2.116 In its Business Plan, NGGT proposed a bespoke ODI-F to reward/penalise its performance in the following seven environmental areas compared to an annual target in each area:

a) adoption rate of alternative fuel vehicles
b) reduction in business travel CO2 emissions
c) operational and office waste recycling rate
d) percentage reduction in office waste
e) percentage reduction in office water use
f) percentage increase in environmental value of non-operational land
g) percentage biodiversity net gain in every new construction project.

2.117 NGGT proposed that the incentive would be applied each year to: 1) hold NGGT to account for delivering annual targets in RIIO-GT2, and 2) to encourage NGGT to deliver environmental improvements before the end of RIIO-GT2.

2.118 The ODI-F would compare actual annual performance in each area against specific annual targets and performance thresholds that NGGT proposed. Performance would be scored depending on the level of under or out-performance in each area. NGGT proposed that the metrics are weighted equally such that the scores in each area would be added together to obtain an overall score which would be used to

calculate the level of penalty or reward. NGGT proposed to cap the maximum reward and penalty at +/- £2.5m per annum.[40]

Consultation position

Output parameter	Consultation position
Mechanism design	Accept the basic design of NGGT's proposed environmental ODI-F, subject to resolving the issues discussed in this table.
Scope and weighting	Reduce the weight on the three metrics relating to waste, recycling and resource use by two thirds
Metric for alternative fuel vehicles	Re-specifying the metric to target a reduction in the CO2 emissions from operational transport.
Incentive value	Our proposed options are: • Equating the incentive to the economic value of the disbenefit / benefit arising from the performance level in each area. • Equating the incentive to the efficient delivery costs plus a margin.

Rationale for consultation position

2.119 We propose to accept NGGT's proposal for an environmental ODI-F. Subject to resolving the issues discussed in paragraphs 2.122 to 2.123, we consider that an ODI-F would ensure NGGT has a financial interest, proportionate with its involvement and effort, in achieving or exceeding the baseline targets set out in its EAP.

2.120 We consider several features of the mechanism design have merit. For example, NGGT proposed a symmetric reward / penalty mechanism, with quantifiable metrics, time-bound baseline targets, and a deadband range. The latter feature would help to increase confidence that a performance outturn that exceeds the penalty or reward thresholds is due to the company's actions (or lack of these).

2.121 We are also satisfied that the RIIO-GT2 targets that NGGT proposed in its EAP for metrics for alternative fuel vehicles, business travel CO2 emissions, non-operational land, and biodiversity net gain are a step change in ambition compared to RIIO-GT1, and are at least comparable or exceed those of other network companies and other external benchmarks. NGGT would not be rewarded

[40] See NGGT's Output Delivery Incentive Annex of its RIIO-GT2 Business Plan for full details of the bespoke ODI-F proposal annual targets, scoring system and the calculation of the penalty or reward.

under the incentive for achieving the RIIO-GT2 targets in its EAP, however it would receive a penalty if, on balance, it under-performed across the different metrics. Conversely, it would only receive a reward if it out-performed, on balance, across the seven metrics.

Proposed revisions to NGGT's proposal

2.122 However, we have several concerns with NGGT's proposal. First, we consider that metrics c), d) and e) (listed in paragraph 2.116) would be over-represented in the ODI-F if NGGT's proposed weighting approach is applied. This is because the proposed metrics only represent a small proportion of NGGT's total waste and resource use.[41] Although achieving the targets in this area would have a positive impact, it would be relatively small in comparison to NGGT's overall environmental footprint. In addition, we have low confidence that the targets and thresholds for reducing office water use, and office and operational waste are appropriate because of the lack of historical data and external benchmarking supporting these targets. To address these issues, we are proposing to reduce the weight on the three metrics in the ODI-F by two thirds. This means that the three categories would each have a weight of one third, with a total weighting of 1 in the impact area when the three areas are summed together.

Second, the alternative fuel vehicle (AFV) adoption rate target, metric a), is not a direct measure of environmental performance. We think that the metrics adopted in the environmental scorecard should ideally measure the impact on the environment of the TO's network activities rather than measure the amount of inputs NGGT has deployed to address adverse impacts. To address this issue, we propose to re-specify this metric as a reduction target for CO2 emissions from operational transport compared to 2018/19 levels. We will look to finalise the annual targets and penalty and reward thresholds for Final Determinations.

2.123 Third, the proposed incentive rate does not appear to provide good value for consumers. If we assume that over the five years of RIIO-2 NGGT achieved the Reward Threshold 2 in metric a) and b), and met the Annual Target and final RIIO-2 target in every other metric, it would receive a total reward of £2.5m in RIIO-2. This would equate to a reward of approximately £11,600 per tCO2e[42]

[41] For example, office and operational waste is less than six per cent of NGET's total annual waste by weight.
[42] tCO2e is tonnes of carbon dioxide equivalent emissions.

abated in operational transport, and £9,800 per tCO2e abated in business travel. Both of these rewards would considerably exceed the non-traded cost of carbon, which has an average value of £73/tCO2e over RIIO-2.[43]

2.124 We propose that the incentive rate needs to be recalibrated so that it represents good value for money to consumers. The two options we are consulting on are:

1. setting the incentive rate to the economic value of the disbenefit / benefit arising from a change of performance in each area. For example, valuing the difference in the level of tCO2 emissions between the target and actual performance if NGGT were to achieve the first or second penalty/reward performance threshold. The main benefit of this option is that NGGT would deploy efficient actions to improve its performance where it can do so at less or equal to the cost than the value of the benefit. The disadvantage of this approach is that monetised values for the environmental benefits of some of the metrics are not readily available or known
2. Another option would be to set the incentive with reference to the efficient costs of mitigating an impact, ie the abatement cost plus a margin. This option makes it possible to set a financial incentive for NGGT to realise additional environmental benefits, at a reasonable cost to consumers.[44] However, this approach is not equivalent to the marginal social cost of the environmental impact. Therefore, it would not be a good indication of consumers' relative priorities for reducing environmental impacts.

2.125 Applying either of the above, or even a combination of the two, would result in an ODI-F with multiple incentive rates that are specific to either one or more of the metrics. While this would add some complexity, we consider it would improve the overall value for money to consumers of the proposed financial incentive.

Consultation questions

NGGTQ9. Do you agree with our proposals for the Environmental incentive?

[43] We calculated the average value over RIIO-2 using the central estimate of non-traded carbon prices for years 2022-2026 in data table 3 of the UK Government's Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal.
[44] The challenge of monetising environmental impacts includes methodological issues such as representing concepts of environmental thresholds and limits and non-substitutability of natural resources.

Stakeholder satisfaction

Stakeholder satisfaction	
Purpose	To encourage NGGT to provide high levels of stakeholder satisfaction
Benefits	Improved stakeholder engagement can provide insights that help NGGT meet its stakeholders' demands

Background

2.126 In our SSMD, we said that we would narrow the scope of RIIO-GT1's Stakeholder Satisfaction Output and no longer financially incentivise stakeholder satisfaction, as we consider that high quality engagement should now be part of the day-to-day business activity of each network company.

2.127 NGGT proposed a reputational-only ODI for stakeholder satisfaction. The incentive would continue operating as it has done in RIIO-GT1 with the financial reward/penalty element removed, with stakeholders surveyed and asked to rate satisfaction with NGGT's performance on a scale of 1-10.

Consultation position

2.128 We welcome NGGT's proposal to continue using surveys to track stakeholder satisfaction. We propose to accept the proposal as a reputational only ODI without modification.

2.129 We expect NGGT to publish the results of the stakeholder satisfaction surveys annually as part of its annual reporting.

Consultation questions

NGGTQ10. Do you agree with our proposals for the proposed Stakeholder Satisfaction incentive?

PCDs

2.130 Table 9 summarises our consultation on PCDs within the GT sector. It also outlines our consultation position in relation to each of those proposals, signposting where to find additional detail on accepted proposals and outlining our rationale for rejecting other proposals.

Table 9: Proposed RIIO-GT2 PCDs

Output name and description	Consultation position
Decommissioning	**Accept:** Chapter 3 paragraph 3.341
Asset health – non-lead assets	**Accept:** Chapter 3 paragraph 3.294
Compressor emissions – Wormington	**Accept:** Chapter 3 paragraph 3.92
Compressor emissions – King's Lynn	**Accept:** Chapter 3 paragraph 3.131
Compressor emissions - Peterborough	**Accept:** Chapter 3 paragraph3.142
Compressor emissions – St Fergus	**Accept:** Chapter 3 paragraph 3.107
Bacton terminal site redevelopment	**Accept:** Chapter 3 paragraph 3.295
King's Lynn subsidence	**Accept:** Chapter 3 paragraph 3.315
Network Asset Risk Metric (NARM)	**Accept:** NARM Annex
Cyber resilience IT	**Accept:** Confidential annex
Cyber resilience OT	**Accept:** Confidential annex
Physical resilience	**Accept:** Chapter 3 paragraph 3.397

Consultation questions

NGGTQ11. Do you agree with our proposals on the PCDs? If no, please outline why.

Licence Obligations

2.131 Table 10 below summarises LOs that we propose to apply to NGGT in RIIO-GT2.

Table 10: Proposed NGGT LOs

Output name	Output type	Further detail
Emergency response and enquiry service	LO[45]	SSMD GT Annex – Chapter 2
Connections	LO[46]	SSMD GT Annex – Chapter 2
Annual environmental report	LO	Core Document – Chapter 4
Annual network capability assessment report	LO	GT Annex – Chapter 2 Chapter 2
Exit capacity	LO	GT Annex – Chapter 2 GD Annex – Chapter 2
1-in-20 peak day demand capability	LO[47]	SSMD GT Annex – Chapter 4

[45] Not discussed in this document as there has been no change in our position since our SSMD (paragraphs 2.118 - 2.126 in SSMD - GT Annex).
[46] Not discussed in this document as there has been no change in our position since our SSMD (paragraphs 2.77 - 2.84 in SSMD - GT Annex).
[47] Not discussed in this document as there has been no change in our position since our SSMD (paragraphs 4.53 - 4.60 in SSMD - GT Annex).

Annual network capability assessment report

Annual network capability assessment report	
Purpose	To implement a process that brings greater transparency to the physical capability of the NTS. To facilitate better consideration of the physical capability of the NTS in decision making relating to new network investment, operational constraint management and the management of network access.
Benefits	Decisions relating to network investments, constraint management, and access to the NTS are driven by a better understanding of the physical capability of the NTS.

Background

2.132 In our SSMD,[48] we asked NGGT to undertake an assessment of the physical capability of the NTS. Looking ahead to RIIO-GT2 price control, we also said that we would put in place a Licence obligation on NGGT to produce an annual network capability assessment.

2.133 In response to our SSMD, NGGT developed a process for assessing the physical capability of the NTS based on hydraulic network analysis[49] and statistical analysis of historical flow patterns. The process outputs network capability metrics that are visually represented through chart form[50] for seven geographic zones (these are referred to as Entry and Exit Zones). The process also produces forecasts of the number of times per year the NTS is unable to meet the user requirements, which allows for forecasts of constraint and commercial action costs to be developed.

Approach to assessment

2.134 Alongside its Business Plan, NGGT submitted the following three reports:

- a network capability report,[51] which outlines NGGT's approach to the assessment of the physical capability of the NTS. The report also sets out entry and exit capacity metrics for RIIO-GT2 price control. This report included NGGT's proposed network capability target for the RIIO-GT2 period

[48] Table on page 42 of the RIIO-2 Sector Specific Methodology Decision - Gas Transmission.
[49] Analysis that uses network models that respect the multidimensional non-linear thermodynamic relationships between gas flow, pressure and temperature, etc.
[50] Network capability metrics are also referred to as "flame charts".
[51] The initial network capability assessment report and the network capability targets report were combined into this single report by NGGT. This was agreed with Ofgem prior to NGGT's RIIO-GT2 Business Plan submission.

- a network capability stakeholder engagement report, which sets out NGGT's stakeholder engagement that underpins its network capability assessment
- a baseline obligated capacity report, which proposes reductions to capacity baselines at two entry points for the start of RIIO-GT2.

2.135 We assessed each of these reports, and relied on technical support from AFRY to support our assessment. AFRY's report is published alongside Draft Determinations as Audit of Network Capability Assessment Annex.

Consultation position

Output parameter	Consultation position
Network capability assessment methodology (NCAM)	NGGT to develop and maintain a robust NCAM. NGGT to review the NCAM at least once every two years and make necessary changes.
Annual network capability assessment report (ANCAR)	NGGT to submit ANCAR, including: • Flow forecasts across all network Entry and Exit Zones. • The level of physical Network Capability for each of these Entry and Exit Zones. • The level of Network Capability that can be delivered using commercial tools for each of these Entry and Exit zones. • Changes to the level of physical network capability at all Entry and Exit Zones compared to the previous year, including an explanation of the drivers of these changes. • A forecast of the target level of physical Network Capability in 10 years' time, taking account of the needs of NTS users.
Network capability targets	We do not propose to set network capability targets for the RIIO-GT2 period
Capacity baselines	We propose to amend NGGT's Licence to reduce baseline capacities at two Entry Points (St Fergus and Theddlethorpe). NGGT to initiate a comprehensive review of baseline capacities ahead of the next price control review.

Rationale for consultation position

NCAM

2.136 The network capability report submitted by NGGT provides a high level view of the methodology to assess the physical capability of the NTS. NGGT has divided its network into seven Entry and Exit Zones, and has developed an approach based

on the use of visual tools (called flame charts) to express the physical capability of the NTS within that zone.

2.137 We found the use of flame charts a welcome step that has enhanced the transparency of a complex topic. However, we also found that the network capability report lacked sufficient detail to allow us to reach an informed view of the robustness of the methodology and assumptions used. While NGGT told us that it had built upon the methodology set out in the Transmission Planning Code (TPC) and internal network analysis tools, the report did not provide details of assumptions used and the sensitivity of its results to those assumptions.

2.138 AFRY obtained further details about the methodology and assumptions through a set of targeted questions that NGGT responded to. Following its own assessment, AFRY identified a number of weaknesses in NGGT's methodology and assumptions, particularly relating to:

- assumptions in the network analysis models regarding within-day flow patterns
- assumptions in the network analysis models regarding the requirements for pressure
- assumptions regarding the price paid for effecting constraint management actions.

2.139 In its network capability report, NGGT stated that the network capability assessment process requires ongoing development during RIIO-GT2 price control. In particular, it said that the development of a robust approach to the treatment of boundary transfer capability between Entry and Exit Zones and within day changes would be key areas for improvement.

2.140 We agree that NGGT should undertake further work on its NCAM, in particular to address concerns raised by AFRY about the use of assumptions.

2.141 We are concerned that the use of relatively extreme and as yet unjustified assumptions in NGGT’s analysis has materially understated the physical capability of the NTS. This undermines our confidence in the results of NGGT’s network capability assessment and limits our ability to rely on them when assessing NGGT’s Business Plans, eg in assessing the CCM target and investment Cost Benefit Analyses (CBAs) and monitoring out-turn performance in RIIO-GT2.

2.142 We propose to introduce new Licence obligations on NGGT in relation to NCAM:

- a requirement to develop and maintain a new and robust NCAM that builds upon the work done so far. NGGT should publish the NCAM on its website
- a requirement to review the methodology and assumptions used on a regular basis (no less than once in two years), taking account of feedback from NTS users, Ofgem and other stakeholders. In the interests of transparency and good governance, we intend to require NGGT to demonstrate how it has taken account of Ofgem's feedback and the views of NTS users. NGGT should publish the results of this review and any consequent changes to the methodology and assumptions.

Annual Network Capability Assessment Report

2.143 We propose to introduce a new Licence obligation on NGGT to submit an ANCAR that includes the following items:

- flow forecasts across all network Entry and Exit Zones
- the level of physical Network Capability for each of these Entry and Exit Zones (in chart form and with the underlying data in spreadsheet format) determined using the NCAM
- the level of Network Capability that can be delivered using commercial tools for each of these Entry and Exit zones
- changes to the level of physical network capability at all Entry and Exit Zones compared to the previous year, including an explanation of the drivers of these changes
- a forecast of the target level of physical Network Capability in 10 years' time, taking account of the needs of NTS users.

2.144 ANCAR can deliver value by providing a sound basis for making future network investment decisions and efficient trade-offs between investment in physical assets and the cost of commercial tools at NGGT's disposal.[52]

Network capability targets

2.145 We do not propose to set network capability targets for the RIIO-GT2 period.

[52] Commercial tools include Capacity Buybacks, Locational Energy Trades, Turn Up/Turn Down Contracts, etc.

2.146 We have not identified a concern with NGGT's proposal to maintain the same level of network capability at the end as at the start of the RIIO-GT2 period. However, we note that under NGGT's methodology, the capability of the network is influenced by the physical capacity of its assets as well as patterns of demand, supply and gas flows. This means that under certain conditions (eg falling demand or shifting gas flow patterns), the assessed capability of the network could be maintained with fewer or lower rated physical assets. Indeed, as NGGT's report points out, NGGT's proposed decommissioning of compressor stations during the RIIO-GT2 period is not forecast to lead to a deterioration in assessed network capability. This has implications for how we would use the results derived from NGGT's current methodology. For instance, when assessing whether NGGT has delivered PCDs or other deliverables that it has been funded for, we would not just consider capability impacts as derived from the network capability assessment, we will also look at the underlying drivers of that impact.

Capacity baselines

2.147 We propose to accept NGGT's proposal to reduce capacity baselines at two entry points at the start of RIIO-GT2 period, namely:

- St Fergus from 1670.7 GWh/d to 1500 GWh/d
- Theddlethorpe from 610.7 GWh/d to 0 GWh/d.

2.148 We note that NGGT has consulted with relevant stakeholders and NTS users in reaching its conclusions, and has taken account of potential levels of demand and supply at each entry point under the FES. Therefore, we think that it is appropriate to accept NGGT's proposed reductions to capacity baselines as these two entry points.

2.149 We intend to amend these baseline capacities in NGGT's Licence as part of the changes to implement the RIIO-2 price control Final Determinations. We also expect to initiate a comprehensive review of baseline obligated capacities ahead of the next price control review. This will be a separate workstream to RIIO-2 price control.

<u>Consultation questions</u>

NGGTQ12. Do you agree with our proposals for LO in relation to NCAM and ANCAR?

NGGTQ13. Do you agree with our proposal not to set network capability targets for RIIO2?

NGGTQ14. Do you agree with the proposal to reduce entry baseline capacity at St Fergus?

NGGTQ15. Do you agree with the proposal to reduce entry baseline capacity at Theddlethorpe?

Consumer Value Propositions

2.150 As set out in Chapter 10 of the Core Document, we propose that NGGT has failed the Stage 1 Minimum Requirements of the BPI. On that basis, NGGT is not eligible to receive rewards under Stage 2 of the BPI (CVP).[53] In the event that our position on NGGT's Stage 1 outcome changes because of this consultation, we have provided our views on the CVPs proposed by NGGT in its Business Plan.

2.151 In the absence of failing Stage 1 of the BPI, our proposal for Stage 2 would have been that two CVPs proposed by NGGT should receive rewards.

2.152 Table 11 below summarises CVPs proposed by NGGT in its Business Plan and our consultation position in relation to each. Where additional space is required to outline our rationale, we have provided further information under specified headings.

2.153 For further information on the proposed CVPs, please see NGGT's published Business Plan.[54]

[53] Business Plan Guidance – Paragraph 5.12.
[54] NGGT – Business Plan, Consumer Value Propositions Annex, 9 December 2019.

Table 11: NGGT's CVP Proposals

CVP name and description	Consultation position
CVPs we propose to accept (subject to eligibility under the BPI)	
Natural environment improvements: Enhancing the value of the natural assets on non-operational land by 10% over the course of RIIO-2, delivering £1.75m benefit through environmental and community benefits.	**Accept:** We consider that NGGT's proposal goes beyond BAU and provides demonstrable consumer benefit – Please see further information under the heading 'Natural environment improvements'.
Community initiatives: Committing 0.3% of major project spend to consumer-led community improvements, delivering £0.6m benefit through community benefits.	**Accept:** We consider that NGGT's proposal goes beyond BAU and provides demonstrable consumer benefit – Please see further information under the heading 'Community initiatives'.
CVPs we propose to reject	
Methane emissions reduction: Increasing focus on reducing all methane emissions. In particular, monitoring leaks on the network and work on ways to reduce them. NGGT estimate this would deliver benefit in the order of magnitude of £2.2m, through environmental benefits.	**Reject:** We consider that an efficient operator should already work to minimise and prevent leaks, and it is not sufficiently demonstrated that this proposal goes beyond BAU.
Whole systems strategy: Taking a leading role in the decarbonisation of heat for gas transmission, collaborating across industry on a hydrogen workplan and innovative solutions, delivering benefit in the order of magnitude of £2.2m, through lower bills, wholesale energy prices and environmental benefits.	**Reject:** We welcome NGGT's ambition to take a leading role in the decarbonisation of heat. However due to the lack of detail around the activities this will entail[55] it is not possible to robustly quantify the consumer value of this ambition.
Facilitate connection of smaller gas suppliers: Committing to implement improvements from Customer Low Cost Connections (CLoCC) project into BAU, enabling small and medium connections for less than £1m and in less than 12 months, facilitating connection of smaller gas suppliers to the network. NGGT estimate this would deliver	**Reject:** We welcome NGGT's commitment to speed up and lower the cost of small and medium connections through its CLoCC project.[56] We expect innovation funded through the NIC in RIIO-GT1 to be rolled out as BAU in RIIO-GT2, and NGGT is already obligated under its Licence to

[55] For example, without detailing actual actions it is difficult to understand what a 'leading role' would entail.
[56] National Grid Gas - Project CLoCC .

CVP name and description	Consultation position
benefits in the order of magnitude of £33m, through lower bills, wholesale energy prices and environmental benefits.	facilitate all reasonable connection requests. As such, we do not feel this warrants an additional reward.
Business carbon footprint reduction – construction: Achieving carbon neutral construction by 2026, delivering £0.3m benefit through environmental savings.	**Reject:** We recognise NGGT's proposal to achieve carbon neutral construction as part of wider actions to reduce its carbon footprint. However, we consider reducing BCF should be a BAU ambition for all TOs and it has not been demonstrated how this goes beyond that.
Resilience solution at Blackrod: Investing in a new pipeline at Blackrod to connect the Blackrod network offtake, and a new Above Ground Installation multijunction, to increase supply security, delivering £173m net benefit through reliability of supply and lower bills. Enhanced network resilience will benefit future consumers, particularly in the North West.	**Reject:** We are rejecting the investment that the CVP is based on as we do not consider it in consumers' interest and reject the needs case for the project - Detail of our cost and engineering assessment can be found in Chapter 3.
Security innovation application: Rolling out an open-source SCADA innovation initiative on compressor sites, offsetting the full replacement of control systems from RIIO-GT2 to RIIO-GT3, delivering £9.2m net benefit through lower bills in RIIO-GT2.	**Reject:** NGGT has not demonstrated that this activity goes sufficiently beyond BAU given that similar activities have been undertaken without any additional reward during RIIO-GT1.

Consultation questions

NGGTQ16. Do you agree with our proposals on the CVPs? If no, please outline why.

Accept: Natural environment improvements

Natural Environment improvements	
Purpose	To improve the natural capital value of NGGT's non-operational land.
Benefits	Improved environmental amenity and enhanced natural environment.

Background

2.154 In our SSMD,[57] we highlighted biodiversity as an area for companies to focus on when considering the environmental impact of their operations.

2.155 NGGT proposed a CVP for £1.75m for increasing the natural capital value of all its non-operational land by 10% during RIIO-2 at no additional cost to consumers. If successfully delivered, this will result in biodiversity enhancement to around 1,093 hectares of NGGT's sites.

Consultation position

Output parameter	Consultation position
Deliverable	Increasing the natural capital value of all NGGT's non-operational land by 10% during RIIO-2.
CVP value (£m)	To be confirmed
CVP reward (£m)	Revised CVP value * 0.36646[58]
Proposed approach to allowance clawback	Pro-rata return of reward for proportion of non-operational land that does not increase by 10% during RIIO-2.

Rationale for consultation position

2.156 We propose to accept NGGT's Caring for the Natural Environment CVP because it goes beyond BAU and delivers demonstrable environmental benefits. We also note that this proposal has support from both Citizens Advice and the independent stakeholder user group.

[57] SSMD Core Document – Paragraph 7.3.
[58] NGGT totex incentive sharing factor rate.

2.157 However, we have not been able to verify the robustness of the land valuation tool used by NGGT to quantify the value of its land. As such, we are not confident that the value of the CVP is reflective of the actual consumer value being provided.

2.158 We intend to engage with NGGT, NGET and SHET, who all submitted similar proposals in this area, to develop a robust common methodology for calculating the value that consumers place on biodiversity and natural capital ahead of RIIO-2 Final Determinations.

Consultation questions

NGGTQ17. Do you agree with our consultation position to allow (subject to eligibility under the BPI) the natural environment improvements CVP?

NGGTQ18. Do you agree with our proposal to re-quantify the value of the CVP?

Accept: Community initiatives

Community initiatives	
Purpose	To engage with communities affected by the NTS
Benefits	Communities affected by NGGT's construction will benefit from localised community projects

Background

2.159 NGGT proposed a CVP for £0.6m for delivering local community initiatives that benefit communities affected by NGGT's construction projects. NGGT has proposed spending 0.3% of total project costs on these initiatives throughout RIIO-2.

Consultation position

Output parameter	**Consultation position**
Deliverable	Spending 0.3% of total project spend on community initiatives
CVP value (£m)	0.6
CVP reward (£m)	0.22[59]
Proposed approach to allowance clawback	Any underspend is returned to consumers

[59] Value multiplied by NGGT TIM's sharing factor rate.

Rationale for consultation position

2.160 We welcome NGGT's proposal to invest in community initiatives in communities impacted by its construction work. We consider that committing to spend 0.3% of total project costs on these initiatives goes sufficiently beyond BAU, and we note strong stakeholder support for the proposal.

2.161 NGGT provided additional information around the types of community initiatives it intends to do, and we are satisfied that these are worthwhile and provide demonstrable local benefits.

2.162 We acknowledge that while some companies have made similar proposals that assume a social return on investment multiplier,[60] NGGT assumed the consumer value to be the money actually spent on the initiatives. We welcome this and accept NGGT's benefit quantification methodology.

2.163 The CVP output for NGGT is spending £0.6m on community initiatives during RIIO-2. If NGGT spends less than this, any remaining unspent amount is to be returned to consumers.

Consultation questions

NGGTQ19. Do you agree with our consultation position to accept (subject to eligibility under the BPI) the community initiatives CVP?

[60] See Net Zero Fund CVP rejection in Chapter 2 of SPT Annex.

3. Cost of Service - setting baseline allowances

Introduction

3.1 This Chapter sets out our proposed allowances against the different cost areas within NGGT's BP submission. We have set baseline totex allowances for NGGT only where we are satisfied of the need for and certainty of the proposed work, and where there is sufficient certainty of the efficient cost of the work. We provide our views on what elements of the plan should be accepted as the basis for setting the RIIO-GT2 baseline allowance, what elements should be rejected as not being in consumers' interests and any modifications we are proposing to the efficient costs for company projects or activity levels. We also present the price control deliverables that arise from the proposed list of approved projects.

3.2 Table 12 below sets out our proposed RIIO-GT2 totex allowances for NGGT, grouped by the main cost categories within the BPDT.

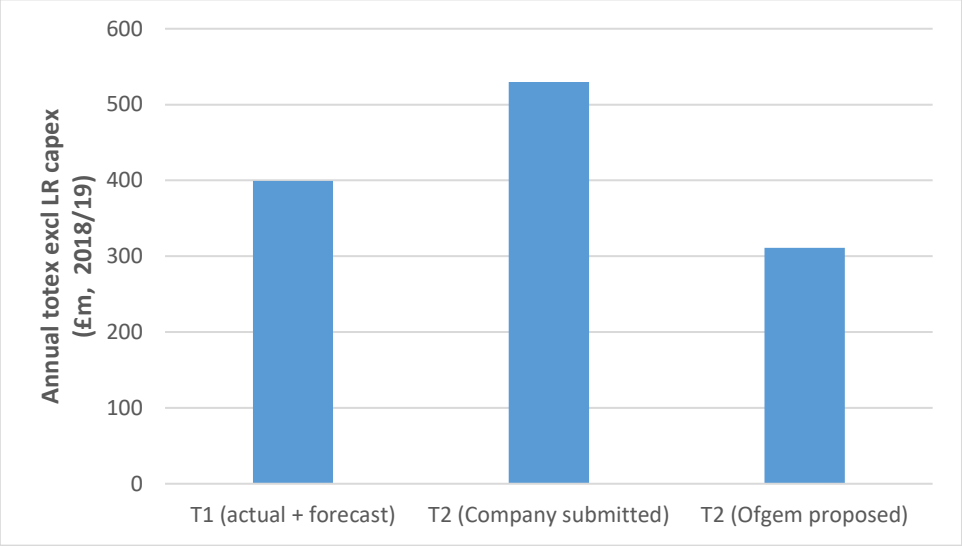
Table 12: Proposed NGGT totex components

Cost category	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Load related expenditure	11.59	2.44
Non-load related	898.74	517.51
Other costs	545.80	230.31
Non-op Capex	296.50	68.40
Network operating costs	389.51	379.65
Indirect costs	518.24	411.10
Ongoing efficiency	-57.92	-50.50
Total	**2,602.45**	**1,558.91**

3.3 We propose to allow £1.56bn of NGGT's £2.60bn baseline request. Of this baseline allowance, we propose to tie £699.92m to PCDs or a use-it-or-lose-it (UIOLI) allowance to ensure NGGT is held accountable for delivery of its specified outputs. We also propose to use UMs to assess further potential expenditure during RIIO-GT2.

3.4 The submission and proposed allowances for RIIO-GT2, and forecast RIIO-GT1 end position, are shown in Figure 2, all values are shown in annual average and exclude load related capex.[61]

Figure 5: NGGT annualised Totex in RIIO-1 and RIIO-2



3.5 Of our proposed total baseline totex allowance, we assess £942.70m to be of high-confidence and £581.58m of lower-confidence. In addition, some costs are considered to be exempt from the BPI and TIM mechanisms and these are noted in the relevant section relating to the cost category. This results in a sharing factor for the totex incentive mechanism at 36.65%.

3.6 Where have considered lower-confidence costs to be poorly justified, we propose to subject these costs to Stage 3 penalty of the BPI. The total proposed penalty under BPI Stage 3 is £18.60m.

3.7 In light of our consultation position to fail NGGT on the BPI Stage 1 Minimum Requirements assessment, NGGT is not eligible for rewards under Stage 4 of the BPI. However, since our position is subject to consultation and may change, we have assessed NGGT's performance under Stage 4 of the BPI. We propose that NGGT would not have be rewarded under the BPI Stage 4 because we have made

[61] For all TOs, we have excluded load-related capital expenditure from the comparison in Figure 2 because direct comparison of our baseline proposals against RIIO-T1 actual rates of expenditure would be misleading. This is because the RIIO-T1 actual expenditure for load reflects all of the costs covered both by the price control baseline allowances and the RIIO-T1 uncertainty mechanisms. By comparison, our baseline proposals for RIIO-T2 do not reflect the impact of uncertainty mechanisms. We have set uncertainty mechanisms for RIIO-T2 to accommodate a potentially significant increase in investment needs, however, do not currently have a central forecast for this value. For NGGT we note that load related capex takes up a very small proportion of the Totex.

reductions to these costs and therefore, NGGT has not lowered our aggregate view of high-confidence costs.

3.8 The following sections set out Ofgem's proposed allowances, and the rationale for any differences from the allowances requested by NGGT in its submissions. These are structured according to Table 13 below.

Table 13: Structure of the cost components

Totex component	Sub sections	Projects covered
Load related Capex	Entry	N/A
	Network capability	Blackrod reinforcement Changing customer needs Tactical Access (Tirley AGI)
Non-load related Capex	Compressor emissions	Hatton Wormington St Fergus King's Lynn Peterborough and Huntingdon Recompression Methane Detection and Quantification
	Asset health	Seven asset health themes: Valves, Compressors, Pipelines, Plant and Equipment, Civils, Electrical, Cabs
	Other asset health costs	St Fergus Subsidence Bacton King's Lynn Subsidence Stopples GRAID Decommissioning
Non-operational Capex	IT and Telecoms	N/A
	Strategic Spares	Small tools, equipment, plant and machinery
	Non-operational property	N/A
	Vehicle Fleet	N/A
Other costs	Physical security	N/A
Network operating costs	Faults	N/A
	Inspection and maintenance	N/A
	Operational property	N/A
Indirect costs	Business Support	N/A
	Closely associated indirects	N/A
	Quarry and Loss	N/A
	Pension costs	N/A
Assessment of risk	N/A	N/A
Cost confidence	N/A	N/A

Totex component	Sub sections	Projects covered
Ongoing efficiency	N/A	N/A

3.9 As appropriate, we set out the following for each cost area:

- background
- our consultation position
- rationale for our consultation position
- outputs (PCDs/UMs)
- cost confidence
- BPI Stage 3 and 4
- consultation questions.

3.10 In GT, a number of our proposed UMs are closely linked to our baseline funding proposals. Hence why we cover them this Chapter and Chapter 4 of this document.

Load related Capex

3.11 LRE relates to investment to expand current network capacity or connect with new demand sources. NGGT only requested LRE allowances for the TO business.

3.12 NGGT's requested baseline and uncertain allowances for LRE are summarised in Table 14 below.

Table 14: Proposed LRE allowances

All costs	Company Requested Baseline	Company Proposed UM	Ofgem Proposed Baseline	Ofgem Proposed UM
Entry	-	262.00	-	Yes
Exit	-	-	-	No
Network Capability	11.59	-	2.74	No
Offtakes	7.42	-	7.42	No
Offtakes (customer Contributions)	(7.42)	-	(7.42)	N/A
Capitalised Opex adjustment	-	-	(0.30)	N/A
Total	**11.59**	**262.00**	**2.44**	

Entry

3.13 NGGT proposed any baseline funding in this category. It proposed £262.00m of uncertain costs relating to the possible development of Milford Haven terminal

(South Hook). We propose to consider these costs as part of the incremental capacity UM detailed in Chapter 4 of this document.

Network capability

3.14 NGGT proposed three projects under Network Capability:

- Blackrod reinforcement
- changing customer needs
- tactical access (Tirley AGI).

3.15 These investments are separate to NGGT's NCA that we set out in Chapter 2 of this document.

Blackrod reinforcement

Background

3.16 NGGT identified a potential risk to the Blackrod offtake in the North West of England, whereby heavy rainfall could potentially lead to overflow of a dam, which could then lead to damage to a main feeder pipeline.

3.17 NGGT also depends on co-operation with Cadent to enable maintenance on sections of pipework in the region, and there is a risk that if Cadent are undertaking maintenance at the same time that NGGT will not be able to carry out maintenance work.

3.18 The project is currently at the start of Stage 1,[62] Needs Case Assessment, and a project option has yet to be selected. NGGT requested £8.85m of baseline funding to build a pipeline that connects two feeder pipelines in the region to provide additional resilience, with the pipeline going live by 2026.

3.19 NGGT also proposed a CVP of £173.00m associated with this project - our rationale for rejecting this CVP is set out in Chapter 2 of this document.

Consultation position

3.20 We propose to reject the funding request for the Blackrod reinforcement project.

[62] See the compressor emissions section in this Chapter for details of NGGT's project stages.

Rationale for consultation position

3.21 Our view is that the justification for this project is inadequate, with no certainty around the needs case for the proposed additional resilience.

3.22 NGGT's Business Plan submission for Blackrod reinforcement did not include information on:

- historical outages
- probability of future outages that could put supply at risk
- how potential outages would be managed before the new pipeline would be commissioned in 2026.

3.23 Based on our engagement with NGGT on these areas, only a single outage has taken place on the relevant feeder in recent years, with no customers affected by the outage. Furthermore, NGGT anticipates co-ordination with Cadent would allow the feeder to continue to operate until 2026.

3.24 NGGT also confirmed in correspondence that a full Quantitative Risk Assessment (QRA) has not yet been produced for this project, and that no engagement has taken place with HSE around the potential risk of the dam overflowing and affecting NGGT operations.

3.25 The project is also in the early stages of development, and by NGGT's own project development process, the final project Capex cost accuracy is +/- 30-70%.

3.26 The low certainty around the costs proposed means it is also difficult to justify setting a baseline allowance for this project, while the low materiality overall makes the project a poor candidate for its own UM.

Changing customer needs

3.27 NGGT requested £1.73m to install new metering equipment at sites. We propose to accept these costs as NGGT has justified the investment is required to accurately measure gas flows.

Tactical Access (Tirley AGI)

3.28 NGGT made a £1.0m funding request to install additional valves to enable maintenance of the Tirley AGI without restricting flows from Milford Haven.

3.29 We propose to accept these costs as NGGT has justified this investment as it provides flexibility to avoid constraints of a major supply terminal.

Offtakes (customer contributions)

3.30 NGGT forecast £7.42m of expenditure to complete customer connections projects, which commenced in RIIO-GT1 and are paid for by customer contributions.

3.31 We propose to allow NGGT's requested expenditure because the needs case is met by the customer.

3.32 As these costs are customer funded we have excluded them from the BPI and sharing factor calculation.

Cost Confidence

3.33 We considered the three projects submitted under the Network Capability banner to be lower-confidence due to the lack of cost justification provided for each.

3.34 As the work on offtakes is wholly customer funded we did not include this in our assessment of confidence.

BPI Stages 3 and 4

3.35 Given we propose to remove this project and associated costs of £8.85m, we consider this cost reduction should be subject to Stage 3 penalty.

Consultation questions

NGGTQ20. Do you agree with our proposal to reject the Blackrod Reinforcement project?

NGGTQ21. Do you agree with our proposed allowances for LRE?

Non-load related expenditure

3.36 This section sets out our assessment of non-load related expenditure (NLRE), these are costs associated with the replacement or refurbishment of assets, which either are at the end of their useful life due to their age or condition, or need to be replaced on safety or environmental grounds. NGGT only proposed NLRE costs for the TO business.

3.37 NGGT's proposed baseline and our proposed allowance are set out in Table 15.

Table 15: Proposed NLRE

Cost category[63]	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)	Ofgem Proposed UM
Compressor Emissions	145.54	85.19	Yes
Asset Health	616.11	389.68	Yes
Other Asset Health costs	137.09	109.84	No
Capitalised Opex adjustment	-	(67.20)	N/A
Total	**898.74**	**517.51**	

3.38 We have limited data available to benchmark costs in this area, historical volume information is also largely unavailable as it has not been a pre-requisite of ongoing reporting in the RIIO-GT1 period. NGGT has been unable to retrospectively provide historical volume data as required in the BPDT because its current systems do not currently capture this information.

3.39 NGGT has stated that it has an in-flight project, 'Richmond', which will implement new asset management capability and allow NGGT to report cost and volumes in RIIO-GT2. We intend to implement additional reporting requirements within the RIIO-2 Regulatory Reporting Packs to ensure greater transparency and ability to set allowances independent of NGGT's forecasts in the next price control periods.

3.40 NGGT has also been unable to present benchmarking data in support of its investment plan, as we requested in our SSMD.[64] NGGT investigated this but were unable to produce any meaningful comparators. We consider NGGT's explanation sufficient but expect it to continue to work with industry to develop suitable comparators for benchmarking.

3.41 As a result, we conducted a bottom-up assessment based on the evidence provided by NGGT, allowing costs & volumes where they were justified and disallowing costs & volumes where they were not.

3.42 In GT, allowances are set on post-capitalisation costs. We assess some Opex costs (CAI and BS) pre-capitalisation to ensure a like-for-like comparison with ET. We have then applied any adjustment arising from Opex costs across the Capex plan.

[63] All costs presented exclusive of NGGT submitted efficiency ambition.
[64] See SSMD Chapter 5.

Compressor emissions

Background

3.43 NGGT operates a number of gas fired compressor units across the National Transmission System (NTS). These units emit air pollutants that NGGT is obliged under law to control and manage.

3.44 In RIIO-GT1 and the prior price controls, we set NGGT allowances to ensure its compressor fleet could comply with industrial emissions legislation, such as the Industrial Emissions Directive,[65] which sets emissions limits for combustion plants over 50MW thermal capacity and requires operators to invest to improve emissions on an ongoing basis ('IPCC compliance').

3.45 Throughout the RIIO-GT1 price control, we reviewed a number of re-opener submissions from NGGT,[66] and in 2019 agreed on the needs case to invest at the Hatton compressor station to retain compression capability at the site following the 2023 LCP compliance deadline.

3.46 The next major deadline affecting the operation of NGGT's compressor fleet is in the Medium Combustion Plants Directive (MCP),[67] which applies to plants under 50MW thermal capacity and limits the operation of non-compliant plants to less than 500 hours per annum on a 5-year rolling average from 2030 onwards.[68]

3.47 In our SSMD,[69] we requested NGGT to produce a Compressor Emissions Compliance Strategy (CECS)[70] outlining its plan to meet emissions compliance across its compressor fleet by 2030.

3.48 We also stated our intent to set PCDs to hold NGGT to account for delivering appropriate levels of emissions compliant compression capability for the funding provided.

[65] Industrial Emissions Directive.
[66] Ofgem 2015 IED reopener decision letter, Ofgem 2018 IED reopener decision, and St. Fergus and Hatton - Ofgem decision.
[67] Medium Combustion Plants Directive.
[68] That deadline will, notwithstanding the UK's forthcoming exit from the EU, still be applicable as a result of the European Union (Withdrawal) Act 2018. The Act provides that all EU law existing at the end of the transition period will continue to have effect in the UK as "retained EU law".
[69] SSMD GT Sector Annex – Chapter 3.
[70] NGGT CECS document.

Compressor Emissions Compliance Strategy

3.49 Based on the requirements of our CECS guidance,[71] NGGT set out in the CECS:

- its high level view of the compressor fleet on the NTS in 2021, 2026 and 2030
- the sites to be considered for investment in RIIO-GT2 and RIIO-GT3
- forecast run hours for these sites
- outage times for these sites
- a long-list of investment options to be considered
- an overview of how RIIO-GT1 innovation projects would be rolled out through RIIO-GT2
- a list of compressor units to be derogated or decommissioned by the MCP deadline.

3.50 We consider the CECS to have passed our Business Plan Guidance (BPG) requirements, and the document has proven to be a useful source of information for NGGT's Business Plan for RIIO-GT2. For example, NGGT proposed to reduce the size of its compressor fleet from 71 to 52 units between now and 2030.

3.51 The CECS has also helped to ensure that Ofgem and the relevant Environmental Regulators[72] have received a clear and consistent message from NGGT on the long-term plans for its compressor fleet.

3.52 Within the assessment of long-list investment options for compliance, NGGT discounted the options of using control systems to reduce emissions on existing units and retrofit of existing compressor units with new low emissions gas generators. As these options both provide potential lower cost routes to compliance, we encourage NGGT to explore these options further.

3.53 Based on the assessment of potential compliance routes in the CECS, NGGT has taken the following options forward to CBAs for sites considered for RIIO-GT2 (with some site-specific variations):

- retain existing non-compliant compressor on 500-hour derogation (the counterfactual option)
- two new 15MW units
- one new 30MW unit

[71] Ofgem CECS guidance document.
[72] The Environment Agency, Scottish Environment Protection Agency and Natural Resources Wales.

- one new 15MW unit[73]
- apply emissions abatement technology to existing non-complaint unit(s)
- decommission existing non-compliant compressor(s).

3.54 These options have been considered on a site-by-site basis in our assessment of NGGT's proposals.

GT project assessment process

RIIO-GT1 Approach

3.55 For the RIIO-GT1 price control, we set baseline allowances for construction of new compressors based on regression analysis of historical outturn costs. For projects where the needs case for investment was less certain, we set a variable allowance subject to re-openers in 2015 and 2018.

3.56 As the RIIO-GT1 compressor projects progressed, we found the baseline allowances set did not match up with the actual costs incurred at each site, with both underspend and overspend taking place.

3.57 In our assessment of re-openers, we found projects were either submitted for assessment before options had fully been selected (meaning outturn costs were likely to change) or came in after options selection had been completed. This gave limited scope for us to raise fundamental questions around options selection and the overall project needs case.

Proposed RIIO-GT2 project assessment process

3.58 Based on our review of NGGT's Business Plan, we do not consider it appropriate to utilise our RIIO-GT1 approach for funding compressor and other large projects.

3.59 The projects submitted in NGGT's RIIO-GT2 Business Plan are generally at an early stage in project development, with final options yet to be selected, and with a variance of 30-70% in final outturn costs compared with the current forecasts.

3.60 For the projects put forward for a UM, NGGT proposed a single re-opener window with an allowance provided up front to carry out engineering work.

[73] Approximately equivalent to the power output of a Rolls Royce Avon.

3.61 If we were to continue to use our RIIO-GT1 approach for these projects, there is a significant risk that we would experience the same issues whereby baseline projects face over/underspend and re-openers come too early or too late within NGGT's project development process.

3.62 In our engagement with NGGT following the Business Plan submission, we looked to align our assessment with NGGT's own project development process.

3.63 In line with how project development is handled within wider industry, NGGT follows four main steps when investing in infrastructure:

- stage 1 – Needs Case Assessment
- stage 2 – Options Assessment
- stage 3 – Conceptual Design Development
- stage 4 – Execute/Build.

3.64 As a project progresses through each stage, the cost variance reduces as options are selected and engineering work means costs are built upon increasingly detailed engineering scope of works rather than high level estimates.

3.65 The majority of the projects we have received a funding request for are at Stage 1, and re-openers have previously been assessed part way through Stage 2 or at Stage 3, leading to either an assessment before options selection is complete or after NGGT has already gone out to tender.

3.66 From our engagement with NGGT, we have reached the conclusion that it should be possible to align our own regulatory process with NGGT's project development process, with Ofgem reviewing the initial needs case for a project, assessing the options selection prior to tender submission and then finally reviewing the costs once engineering work is complete.

3.67 We propose the following major GT project assessment approach for all compressor projects where NGGT proposed an UM, Bacton Terminal Redevelopment project, and King's Lynn Subsidence project. We propose that projects reviewed under this will be subject to a PCD and UM.

Stage 1 Assessment - Needs Case Review

3.68 Needs case review for each project as part of Draft and Final Determination for RIIO-GT2.

3.69 Based on the outcome of this assessment we will propose to accept or reject a project, with rejected projects receiving no funding during the RIIO-GT2 price control.

3.70 If we approve a project at Stage 1, we will propose a baseline allowance for development costs that will enable NGGT to progress the project to Stage 3.

3.71 We propose an allowance for development costs of 9% of NGGT's forecast outturn costs for compressor projects (to allow for purchase of long-lead machinery items as necessary) and 5% of forecast outturn costs for non-compressor projects – these figures are based on information NGGT have presented to date.

3.72 At the outcome of our Stage 1 assessment we will propose a list of deliverables for each project, to be completed ahead of our Stage 2 submission, along with a proposed Stage 2 submission date.

Stage 2 Assessment - Options selection

3.73 We propose the bulk of our assessment will take place around Stage 2, once NGGT have developed options for a site, including some engineering assessments leading to a final option selection.

3.74 At this stage we intend to fully assess the needs case for a project, looking at whether the problem stated at Stage 1 still needs to be addressed by investment in network assets. The options considered at this stage will always include decommissioning of equipment alongside other options to help understand the value in investing in a network that is predicted to see usage falling in the future.

3.75 We intend to assess options based on NGGT's best view of outturn costs before going to tender. This approach will allow us to ask fundamental questions about a given project and ensure that options that we believe are in the best interest of consumers are given due consideration in the process. The earlier engagement in the process also creates a decision point that allows NGGT to work with the supply chain on a much narrower field of options reducing the cost and complexity of subsequent market tender events.

Stage 3 Assessment - Funding adjustment

3.76 Following the outcome of our Stage 2 assessment, we propose that NGGT submit a re-opener request at Stage 3 with fully tendered costs and a full conceptual design to obtain funding to complete the project.

3.77 At this stage, we propose to true-up any changes in costs from the initial baseline allowance set to reflect actual costs incurred by NGGT in order to reach Stage 3.

3.78 At this stage, we intend to assess the efficient costs of delivering a project and make any adjustments required to the Licence including outputs, delivery dates and allowances and to the PCFM to reflect our assessment.

3.79 NGGT submitted four projects at Stage 1, Wormington, St Fergus, Peterborough and Huntingdon and King's Lynn. We propose to accept the need for investment at all of these sites as part of our Draft Determination.

3.80 NGGT proposed Hatton for baseline funding as it is at Stage 3. We propose to allow baseline funding as part of our Draft Determinations subject to further assessment in advance of Final Determination.

Compressors consultation position

Table 16: Proposed compressor emissions allowances

Site	NGGT Proposed Project Cost	NGGT Proposed Baseline	NGGT Proposed UM	Ofgem Proposed Baseline	Ofgem Proposed UM
Hatton	71.70	55.13	-	45.00	No
Wormington	87.99	78.49	-	7.92	Yes
Kings Lynn	92.23	0.75	51.89	8.30	Yes
Peterborough & Huntingdon	57.54	0.75	1.70	5.18	Yes
St Fergus	174.35	5.15	118.18	15.69	Yes
Recompression	4.33	4.33	-	2.16	No
Methane Detection & Quantification	0.94	0.94	-	0.94	No
Total	**489.08**	**145.54**	**171.77**	**85.19**	

3.81 To hold NGGT to account for the delivery of each of the compressor emissions projects (except for recompression and methane detection and quantification), we propose to set PCDs to link baseline funding allocations to specific deliverables for each project. Details of our proposed PCDs can be found in the relevant project specific assessment section below.

Project specific assessment - Hatton

Background

3.82 Hatton compressor station supports transmission of flows from the North Sea gas terminals and brings them to areas of high demand in the South East, and facilitates within-day flexibility on the network.

3.83 We rejected a re-opener request for Hatton in 2018 due to NGGT not having selected a preferred solution for replacing the non-LCP compliant compressor units at the site.

3.84 In 2019 we agreed on the needs case for building a new compressor unit at Hatton, and stated that cost assessment would take place as part of the RIIO-GT2 price control settlement, taking into account whether and to what extent NGGT sought to develop a cost-effective build strategy with consideration given to greenfield vs brownfield build.

3.85 In its Business Plan, NGGT submitted a baseline funding request for £74.73m across RIIO-GT1 and RIIO-GT2 for Hatton but no additional supporting information in the form of Engineering Justification Papers (EJPs) or CBAs assessing brownfield vs greenfield build options.

3.86 The project is currently in the Project Stage 3 phase.

Consultation position

3.87 We propose a placeholder view using information we received based upon our 2019 needs case decision, ie for installation of a single new large compressor unit with forecast capital cost of £61m across RIIO-GT1 and RIIO-GT2.[74]

Rationale for consultation position

3.88 As no EJP was provided with NGGT's Business Plan submission, we have not undertaken an engineering review for Hatton at this stage. After asking a supplementary question in January 2020 and subsequent engagement with NGGT, we received a draft EJP in March 2020 and a finalised EJP in May 2020. This will be assessed for our Final Determinations.

[74] NGGT St Fergus and Hatton Needs Case Consultation Response, 24 September 2019.

3.89 The allowance we set in our Final Determination for Hatton will be based upon our review of NGGT's tendered costs, options assessment for greenfield vs brownfield build and we propose to assess the efficiency of CAI and risk costs.

3.90 This will be a bespoke assessment of the tendered project costs, which NGGT proposed to ensure that they are justified. Our assessment will focus on the greenfield and brownfield options provided and we also intend to assess risk allocation in line with the approach detailed in the Risk Assessment section of this chapter.

Hatton compressor PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers a new emissions compliant compressor at Hatton
Expected timing of delivery	January 2024
Totex baseline allowances	£61m (£16m RIIO-GT1, £45m RIIO-GT2)
Accountability mechanism	RIIO-GT2 Close-out report[75]
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.91 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.92 Due to the lack of information provided for Hatton in the NGGT's RIIO-GT2 Business Plan, we propose to fund the Epsilon option put forward in NGGT's 2019 Needs Case submission. Once we have reviewed NGGT's full EJP for Hatton, we will update our view on funding and the deliverables for Hatton as part of our Final Determination.

Project specific assessment - Wormington

Background

3.93 Wormington compressor station supports entry flows from the Milford Haven LNG terminals, with a bi-directional pipeline at the site allowing its compressors to

[75] To be covered in PCD Guidance for relevant Licence Condition.

support flows into England when supply at Milford Haven is high, and delivering gas from England into South Wales when Milford Haven supply is low.

3.94 The site currently operates with an electric Variable Speed Drive (VSD) compressor and two Avon units.

3.95 The Steady Progression FES predicts an increase in LNG flows from Milford Haven in the mid-2020s and flows remaining high through the 2030s, and all FES predict an increase in flows by the mid-2020s compared with current levels.

3.96 Based on NGGT's availability modelling, the two Avon units at the site will not be sufficient to cover all FES forecast flows if limited to 500 hours per annum from 2030 as per the governing MCP legislation.

3.97 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead option for this project is to install two new 15MW compressor units with a forecast outturn cost of £88m, and this was requested as baseline funding in its Business Plan.

Consultation position

3.98 Based on our assessment of NGGT's submission, we see that there is a need to retain compression capacity at Wormington, and will provide £7.92m baseline funding for development costs[76] and allow NGGT to apply for full project funding using the approach detailed above.

Rationale for consultation position

3.99 While operating hours at the site are currently low due to relatively low annual flows through Milford Haven, all units at the site see some operation, with the lead VSD unit seeing over 2,000 hours per annum operation in some years.

3.100 Under the Steady Progression FES, the forecast required operating hours for the Avon units to increase to over 500 hours by the mid-2030s and eventually over 1,000 hours – if these flows were to manifest then retaining the Avon units on 500 hour derogation would not be sufficient to deliver entry flows from Milford Haven.

[76] 9% of forecast project outturn cost in line with our proposed approach for development costs.

3.101 However, under the Consumer Evolution FES, Wormington could meet the required flows without the construction of new units, instead retaining the Avon units on 500-hour derogations.

3.102 Additionally, the options development for Wormington is still at an early stage within NGGT's process, with 30-70% potential variance in costs.

3.103 Due to the uncertainty around future flows from Milford Haven and low certainty around installed cost for the options presented, we propose that the final project costs for Wormington are assessed as part of an UM. This approach is in line with other compressor projects where NGGT have yet to select a preferred option using its project process.

3.104 NGGT should progress this project to the next development stage, for which we propose to provide development cost funding as a baseline allowance.

Wormington compressor PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers finalised Option Selection and FEED studies
Expected timing of delivery	Feb 2022 (Selection), Jan 2024 (Re-opener)
Totex baseline allowances	£7.92m
Accountability mechanism	RIIO-GT2 Close-out report
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.105 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.106 We propose to provide development funding for NGGT to complete the development stage of the Wormington compressor emissions project. The deliverable includes two re-opener submissions to Ofgem to carry out its options assessment following the options selection phase and final cost assessment once NGGT has a preferred vendor from its tender process.

3.107 As part of the Option Selection submission from NGGT, we expect to see:

- variations on spend for options that derogate the non-compliant units to 500hrs/yr. The current Capex cost of £37m to continue operating the existing

Avon units appears very high considering the asset health costs for units with emissions abatement on the same units is much less than this

- options that look to minimise life cycle costs by utilising existing equipment, including compressor ends of the existing units and cabs at the site. These options include installing modern emission compliant engines as well as de-rating and/or applying SCR on the existing Avon units
- a focus on where any new machines would be built, with a strong bias towards re-using existing infrastructure—particularly pipelines and risers. NGGT should determine if any new compressors will be built on greenfield or brownfield by the option selection stage
- use updated Future Energy Scenarios (FES) and Network Capability modelled flows in the Cost Benefit Analyses (CBAs). The current network capability model does not support the functionality to assess the ability of options to provide sufficient network capability across more than one site
- compare and justify the frequency magnitude, and cost of constraints reported for each option for RIIO-GT2 to RIIO-GT1 outturns
- produce a detailed site availability model for each proposed option that can be audited by a third party to ensure that the assumptions built into this key metric are fair and reasonable
- provide an updated breakdown of the capital costs and associated risk, project management, and other such contingencies in line with the RIIO-GT2 GT EJP guidance.

Project specific assessment - St Fergus

Background

3.108 St Fergus compressor station is used to lift gas from the North Sea Mid-stream Partnership (NSMP) gas terminal up to NTS pressures. The current compressor fleet at the site consists of:

- plant 1 – Four Rolls Royce Avons
- plant 2 – Two Rolls Royce RB211s and one Avon
- plant 3 – Two electric VSDs.

3.109 The site received funding previously to meet IPPC compliance via the installation of two VSDs in 2015, and in 2019 we considered the needs case for further investment to replace the Rolls Royce RB211s in 2023 to meet IPPC compliance.

3.110 Based on our assessment of NGGT's needs case submission, we considered it to be unnecessary to invest for IPPC compliance due to the limited emissions savings compared with capital cost, and that the site should be capable of operating following the decommissioning of the RB211s.

3.111 Instead, we agreed that NGGT should consider options for investment to meet MCP compliance in RIIO-GT2, and to come up with a long term plan which also considered any asset health work required at St Fergus.

3.112 In addition to the issues of compressor emissions and asset health at the site, NGGT have raised concerns around subsidence of pipework at St Fergus.

3.113 The project is currently at the end of Project Stage 1 in the project cycle, NGGT have investigated options at St Fergus that follow 4 project strategies;

- derogating existing compressor units with no new machines but extensive asset health work
- redeveloping plant 2 by installing new machines with most equipment on new skids
- re-use existing plant 2 equipment to install new machines
- greenfield build of new units with new plinths and equipment on skids.

3.114 The costs of installing or retaining varying number of units are considered for each of these themes to build a portfolio of options for the project.

3.115 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead project option is to decommission compressor plant 1, rebuild and install three new MCP compliant units at compressor plant 2. NGGT requested £5.15m to cover project development costs and forecast outturn costs of £174.35m for the preferred option (£118.18m in RIIO-GT2).

Consultation position

3.116 We propose to approve the needs case to progress this project and will provide a baseline allowance of £15.69m for development costs.[77] We propose to assess the options selection and full project costs as part of a UM during RIIO-GT2.

[77] 9% of forecast project outturn cost in line with our proposed approach for development costs.

3.117 We also propose to include the proposed St Fergus Subsidence project as part of the UM. For details see St Fergus subsidence in Other Asset Health costs section in this Chapter.

Rationale for consultation position

3.118 The compressors at St Fergus are used to increase the pressure of the gas entering the NTS from the NSMP sub-terminal because the gas from that sub-terminal is at a pressure below that of the NTS. This arrangement is unique on the NTS.

3.119 The key driver for investing in new compressors at St Fergus is to ensure flows from the NSMP sub-terminal can be accommodated from 2030 when the MCP regulations come into effect and restrict the operation of the Avons at the site to 500 hours per annum. NGGT have set out that if compressors are unavailable, the gas from NSMP will be at insufficient pressure to enter the NTS and NGGT will have to pay constraint costs under Section I of the UNC to shippers holding entry capacity at the sub-terminal.

3.120 The Section I costs forecast to be incurred at St Fergus appear very high compared with how the site has operated historically (£4.5m/year). Currently, it is very rare for constraints to occur at St Fergus, and this usually relates to site maintenance outages lasting longer than expected.

3.121 Given the disparity between actual historical constraints at St Fergus and NGGT's forecasts from 2030, we have concerns around the assumptions used to generate the constraint costs and how they have influenced the CBA option ranking at this stage of the process.

3.122 We also have concerns around the lack of maturity of the engineering work completed to inform the total installed cost of the proposals for St Fergus. It is currently difficult to discern from NGGT's submission what is driving the difference in costs between options labelled as "Redevelop" and "Existing" and what equipment would be retained/replaced as part for each option. There is also a lack of clarity around costs included that would address subsidence issues at the site.

3.123 The combination of uncertainty associated with the engineering scopes and Section I costs makes it difficult to select an option at this stage of the St. Fergus project. Further work to build a case to discount Redevelop, Existing or Greenfield

option groups is needed and it is not thought to be suitable to discount any group of options presented in the EJP at this time.

3.124 Our view is that this project is suitable to progress to the next project stage (development phase) as there is a need for investment at St Fergus. However, it is not clear from the submission what the best option is or how the engineering scope of the options presented differ.

3.125 We also propose to move the £4m for St Fergus Subsidence into the total UM allowance for St Fergus, to allow for consistency when assessing how subsidence issues at the site have been addressed.

3.126 For the next project stage, NGGT should look to clarify what is involved in each option considered and provide more robust estimates for the cost of the "redevelop" and "existing" options presented in its submission.

3.127 NGGT should also present more credible constraint forecasts – given flows through St Fergus are expected to decrease from their current levels, we would not expect to see an increase in constraint costs in NGGT's preferred option.

3.128 We are also considering the issue of who should pay for compressor capital costs at St Fergus given that the assets provide compression to NTS pressures for the NSMP terminal only.

St Fergus PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers finalised Option Selection and FEED studies
Expected timing of delivery	Jun 2023 (Selection), Nov 2025 (Re-opener)
Totex baseline allowances	£15.69m
Accountability mechanism	RIIO-GT2 Close-out report
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.129 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.130 We propose to provide development funding for NGGT to complete the development stage of the St Fergus compressor emissions project. The deliverable

includes two re-opener submissions to Ofgem to carry out its options assessment following the options selection phase and final cost assessment once NGGT has a preferred vendor from its tender process.

3.131 As part of the Option Selection submission, we expect NGGT to address the following:

- future flows – it is unclear if the flow forecasts presented are distorted by the lack of commercial tension due to the current funding arrangements
- capacity and constraints review – the issues raised with the constraint forecasts, whereby under all options/scenarios NGGT expect to pay at least £4.5m per year in Section I constraint costs needs to be resolved to allow a fair options selection process to take place. This issue has the potential to change the number of compressors installed at site and/or the project option selected
- definition of Redevelop, Existing and Greenfield options – correspondence with NGGT shows that broad assumptions have been made to generate these different options and further work is needed to provide robust estimates for each before a preferred option can be selected
- clarity on costs – there appears to be some confusion around the actual total installed cost of the project with potential for double counting between project and asset health spend at the site. More detailed cost breakdowns are needed at the next stage of the project to help confirm that no double counting is taking place
- evidence of subsidence issues at site in line with that provided for King's Lynn Subsidence UM and full justification for any remedial expenditure
- use updated FES and Network Capability modelled flows in the CBAs. This is particularly important given the dynamic nature of the gas transmission system usage at this time
- provide an updated breakdown of the capital costs and associated risk, project management, and other such contingencies in line with the RIIO-GT2 EJP guidance.

Project specific assessment - King’s Lynn

Background

3.132 King’s Lynn compressor station supports entry flows from the Bacton and Isle of Grain terminals, along with export flows via IUK at Bacton.

3.133 There are currently three operational compressor units at King's Lynn: one MCP non-compliant compressor unit along with two MCP compliant units.

3.134 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead option for this project is to install two new compressor units before 2030 to replace the non-compliant unit but a project option has not been selected.

Consultation position

3.135 Based on our assessment of NGGT's submission and subsequent correspondence, we have reached the view that the two existing compliant compressor units alone would not be sufficient to meet peak network flows, as such we agree on the needs case to progress this project and will provide a baseline allowance of £8.30m for development costs.[78]

Rationale for Consultation position

3.136 Our view is that some investment will be required at King's Lynn to ensure backup compression is available, however the current preferred solution is forecast to have very low utilisation rates (300-600 hours per annum) and we are concerned about the value that investment presents because of this.

3.137 Our view is NGGT's preferred option of building two new compressor units, bringing the total number of compressors at King's Lynn to four, is not proportional to the shortfall in compressor availability; as such, this is not the most cost beneficial option in the CBA submitted to us.

3.138 The most cost beneficial option presented in the CBA is the counterfactual option to retain the non-compliant unit at the site on 500-hour derogation (two lead units and one backup unit).

3.139 This counterfactual option presents an annual risk of flow constraints following the MCP regulations coming into effect in 2030, and as such NGGT should look to address this risk with a focus on lower Capex options to improve the value of the investment. The lower Capex options should include options to reduce the post-2030 constrain costs by improving the availability of the existing MCP compliant

[78] 9% of forecast project outturn cost in line with our proposed approach for development costs.

units at the site to reduce the reliance on the backup unit while focusing options that minimise spend on the non-compliant unit.

King's Lynn Compressor PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers finalised Option Selection and FEED studies
Expected timing of delivery	Sep 2022 (Selection), Aug 2024 (Re-opener)
Totex baseline allowances	£8.30m
Accountability mechanism	RIIO-GT2 Close-out report
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.140 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.141 We propose to provide development funding for NGGT to complete the development stage of the King's Lynn Subsidence compressor emissions project. The deliverable includes two re-opener submissions to Ofgem to carry out its options assessment following the options selection phase and final cost assessment once NGGT has a preferred vendor from its tender process.

3.142 As part of the Option Selection submission from NGGT, we expect to see:

- variations on spend for Option 2 (ie derogating the non-compliant unit to 500 hrs/yr). The current £24.7m Capex cost to continue operating this unit appears very high
- options that look to retrofit a modern emissions compliant engine to existing compressor plinths at the site to try to minimise the cost of delivering fit-for-purpose new compressor unit(s) at the site. This should include further variations de-rating and/or applying SCR on the existing Avon units
- options that look to boost the availability of the compliant units to minimise the number of hours the non-compliant units would have to operate. The current reported 86% availability for these modern units (ie compressor not available for use for 50days/yr) appears low
- a focus on where any new machine would be built, with a strong bias towards re-using existing infrastructure, particularly pipelines and risers

- use updated FES and Network Capability modelled flows in the CBAs. This is particularly important given the dynamic nature of the gas transmission system usage at this time
- produce a detailed site availability model for each proposed option that can be audited by a third party to ensure that the assumptions built into this key metric are fair and reasonable
- provide an updated breakdown of the capital costs and associated risk, project management, and other such contingencies in line with the RIIO-GT2 EJP guidance.

Project specific assessment - Peterborough and Huntingdon

Background

3.143 Peterborough compressor station works in conjunction with Huntingdon compressor station to ensure South East gas demands are met.

3.144 The sites received funding in RIIO-GT1 to meet IPPC compliance, and by the start of RIIO-GT2 NGGT intends to have 3 Rolls Royce Avons and 2 MCP compliant 15MW units installed at each site. NGGT has identified a potential risk of exit constraints if additional MCP compliant units are not available across these two sites.

3.145 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead option for this project is to build a single new compressor unit at Peterborough and retain one non-compliant unit on 500 hour derogation at Huntingdon.

Consultation position

3.146 Based on our assessment of NGGT's submission and subsequent correspondence, we have reached the initial view that the two existing compliant compressor units alone at each site would not be sufficient to meet peak network flows, as such we agree on the needs case to progress this project and propose to provide £5.18m of baseline allowance for development costs.[79]

[79] 9% of forecast project outturn cost in line with our proposed approach for development costs.

Rationale for Consultation position

3.147 Our view is that some investment will be required at Peterborough and Huntingdon to ensure backup compression is available, however the current preferred solution is forecast to have very low utilisation rates (50-250 hours per annum) and we are concerned about the risk of asset stranding.

3.148 The most cost beneficial option presented in NGGT's CBA is retaining a single Avon on 500 hour derogation at each site, whereas NGGT's preferred option is only shown to be beneficial over the counterfactual case of retaining three Avons at each site on 500 hour derogation.

3.149 Given its poor scoring in NGGT's CBA, we do not currently view the construction of a new compressor unit at Peterborough to be necessary. However, we recognise that some investment will be required at the site to ensure sufficient compressor availability at times of peak demand.

3.150 Given the need for some resilience and rationalisation of the compressor configuration at Peterborough and Huntingdon shown in NGGT's CBA, we view that this project should be progressed to the next development stage, but do not agree with NGGT's lead option. The relatively high Capex cost and low utilisation rates of all the options currently considered presents a significant challenge to deliver an attractive CBA for this site. There is a need to deliver a fit for purpose solution for this project.

Peterborough & Huntingdon PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers finalised Option Selection and FEED studies
Expected timing of delivery	Oct 2024 (Selection), Sep 2026 (Re-opener)
Totex baseline allowances	£5.18m
Accountability mechanism	RIIO-GT2 Close-out report
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.151 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.152 We propose to provide development funding for NGGT to complete the development stage of the Peterborough and Huntingdon compressor emissions project. The deliverable includes two re-opener submissions to Ofgem to carry out its options assessment following the options selection phase and final cost assessment once NGGT has a preferred vendor from its tender process.

3.153 As part of the Option Selection submission from NGGT, we expect to see:

- variations on spend for options that derogate the non-compliant units to 500hrs/yr. The current Capex cost of £17m per unit to continue operating appears very high
- options that look to retrofit a modern emissions compliant engine to existing compressor plinths at the site to try to minimise the cost of delivering fit-for-purpose new compressor unit(s) at the site. This should include further variations de-rating and/or applying SCR on the existing Avon units
- options that look to boost the availability of the compliant units to minimise the number of hours the non-compliant units would have to operate. The current reported 86% availability for these modern units (ie compressor not available for use for 50days/yr) appears low
- a focus on where any new machine would be built, with a strong bias towards re-using existing infrastructure—particularly pipelines and risers
- use updated FES and Network Capability modelled flows in the CBAs. This is particularly important given the dynamic nature of the gas transmission system usage at this time
- produce a detailed site availability model for each proposed option that can be audited by a third party to ensure that the assumptions built into this key metric are fair and reasonable
- provide an updated breakdown of the capital costs and associated risk, project management, and other such contingencies in line with the RIIO-GT2 EJP guidance.

Project specific assessment - Recompression

3.154 NGGT requested £4.33m to install two new recompression units at the Pipeline Maintenance Centre (PMC).

3.155 Based on the information we have received from NGGT, the site has historically operated on three recompression units, one of which is no longer operational.

3.156 Given NGGT's proposal would bring the total up to four recompression units without any justification for the increase, we propose to provide £2.16m, half of the funding request, to bring the total back up to three units in line with historical needs.

Project specific assessment - Methane Detection and Quantification

3.157 NGGT requested £0.94m to rollout the RIIO-GT1 innovation project called Monitoring of Real-time Fugitive Emissions (MoRFE) to establish baseline methane emissions levels at compressor stations.

3.158 Given this project contributes towards reducing methane emissions across NGGT's compressor fleet, we propose to allow this project.

Cost confidence

3.159 We reviewed cost confidence for each compressor emissions project in turn and consider:

- the costs for Hatton to be high-confidence as NGGT submitted tendered costs as justification (£45.00m)
- the costs for St Fergus, Kings Lynn, Peterborough and Huntingdon to be lower-confidence because we have based our allowance on NGGT's forecast costs. We have included the baseline allowance element for these projects (£37.08m) in our calculation of the confidence dependant incentive rate
- NGGT's supporting evidence for its recompression and methane detection & quantification projects to be lower-confidence due to the limited evidence of market testing.

BPI Stages 3 and 4

3.160 We have assessed Hatton costs as high-confidence. However, as NGGT's forecast did not reduce our view of costs and we have reduced costs relative to NGGT's submission there are no costs eligible for the BPI Stage 4 reward.

3.161 We consider it appropriate to exclude the costs for St Fergus, Kings Lynn and Peterborough & Huntingdon from any Stage 3 penalty as we have proposed to provide a proportion of baseline funding and an associated uncertainty mechanism.

3.162 We consider costs associated with recompression to be poorly justified, as NGGT should have been able to provide evidence of outturn costs or further tendering to support these costs. We therefore propose the cost reduction of £2.16m associated with recompression is subject to Stage 3 penalty.

Consultation questions

NGGTQ22. Do you agree with our proposed GT Project Assessment Process?

NGGTQ23. Do you agree with our proposal to provide baseline funding for Hatton subject to us conducting further volume and cost assessment prior to our Final Determination?

NGGTQ24. Do you agree with our proposal to accept the need for investment, provide baseline funding for development work and assess the full project costs during RIIO-GT2 for the compressor projects at Stage 1 - Needs Case Assessment (Wormington, St Fergus, King's Lynn and Peterborough and Huntingdon)?

Asset health

3.163 NGGT's submission for its asset health work included a main plan covering the majority of the day to day asset replacement and refurbishment work, and a series of individual project investment proposals which we have grouped under Other Asset Health.

Table 17: Proposed asset health allowances

Cost Area	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)	Ofgem Proposed UM
Asset Health (Main Plan)	616.11	389.68	Yes
Other Asset Health	137.09	109.84	Yes
Total	**753.20**	**499.52**	

Asset health main plan

Background

3.164 NGGT submitted its main asset health plan as seven distinct investment themes.[80] Each of these was supported by EJPs and CBAs. Furthermore, as part of ongoing engagement and in response to supplementary questions, NGGT submitted

[80] NGGT Business Plan - Chapter 14.

supporting evidence demonstrating the methodology used in deriving its proposed unit costs and relevant condition data in support of submitted volumes.

3.165 NGGT developed a set of cost justification papers for all intervention types above a materiality threshold of £10m using a combination of outturn cost, market testing and estimates and submitted these to Ofgem for assessment. Further to this, through the supplementary question process, NGGT provided detailed methodologies used in determining intervention volumes for assessment by engineering consultants.

3.166 During our assessment NGGT provided updated unit cost information, resulting in increases or decreases in the unit costs. As a result, NGGT's Business Plan request of £616.11m rose to £630.78m. We mostly accept this additional information and explicitly state where we propose to reject it. However, throughout this Chapter our proposed allowances are compared to NGGT's original Business Plan request.

Asset health consultation position

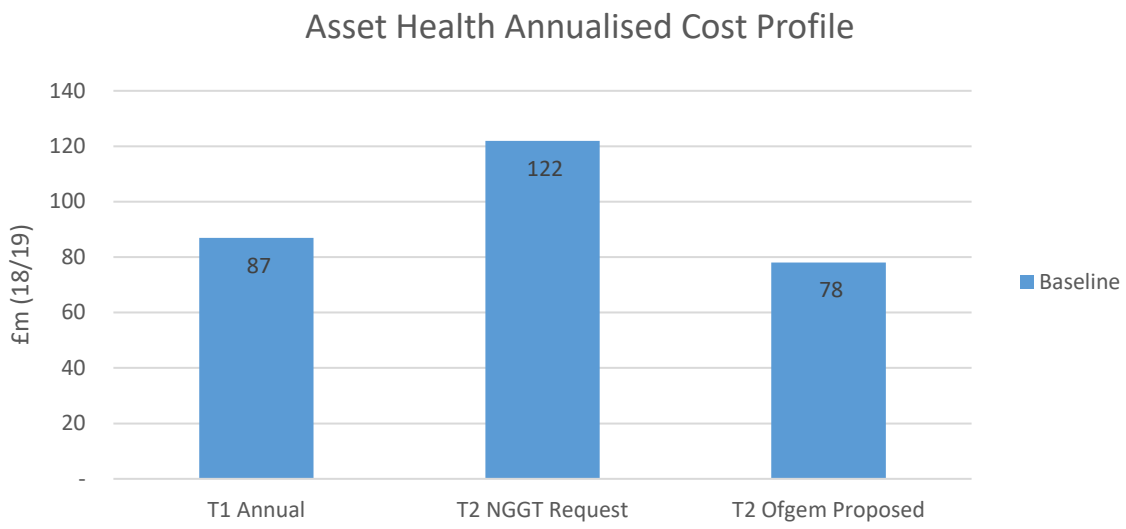
3.167 Table 18 below sets out proposed asset health allowances we propose for asset health by project investment themes.

Table 18: Proposed asset health allowances by project theme

Project Theme (£m)	NGGT Proposed Baseline	Ofgem Proposed Baseline	Ofgem Proposed UM
Valves	63.15	50.83	No
Compressors	113.69	69.51	No
Pipelines	143.53	112.13	No
Plant & Equipment	156.44	82.28	Yes
Civils	79.54	39.97	No
Electrical	28.48	20.58	No
Cabs	31.29	14.38	Yes
Total	**616.11**	**389.68**	

3.168 NGGT requested funding amounting to £122m annually. This compares with current forecast for RIIO1 of £87m. Figure 6 below shows the outcome of our assessment and we propose a baseline funding amount of £78m annually.

Figure 6: Asset health annualised cost profile



3.169 In addition to this baseline allowance, we propose to provide NGGT the opportunity for a funding review through the provision of an asset health re-opener for Cab Infrastructure and Plant & Equipment expenditure and accept NGGT's proposed re-openers for Bacton, St Fergus and Kings Lynn.

Volume assessment

3.170 NGGT's asset health plan was divided into seven themes, each covering a number of asset categories. NGGT provided EJPs at a sub-theme level, each of which covered a mix of approximately five to 15 asset types and intervention types (eg replacement, refurbishment).

3.171 Throughout the rest of this section, we have summarised our assessment and detailed the outcome. Our assessment has been supported by the SME. The full report is confidential as it contains commercially sensitive information. Instead, a technical annex summarising the assessment approach is available alongside this document.[81]

3.172 Our volume assessment focused on the need for investment and the intervention option selected. Elements considered during the review included:

[81] See GT technical annex - Engineering assessment.

- if the intervention volumes were generated from known and inspected defects or if the intervention volume had been estimated based on historical volumes
- how NGGT maintenance and inspection policy influenced the intervention volumes and how they relate to policies from other industries. If the intervention type was required to maintain the company's Licences to operate
- the timing of the intervention in an assets life cycle and if fix on fail approaches were allowable/desirable
- if there is a future need for the assets with evidence that it would be used in RIIO-GT2
- the ability of NGGT to deliver the work in RIIO-GT2/T3 and the potential to bring work forward or push volumes back due to outage availability.

3.173 The outcome of the volume assessment is a list of intervention volumes that we consider justified. This includes disagreeing that individual interventions volumes are required but also selecting different intervention programme options which have changed the overall refurbish/replace mix of large schemes of work.

Cost assessment

3.174 In assessing costs, Ofgem analysed each supporting document provided by NGGT to come to a view of efficient unit costs.

3.175 In conducting our assessment, we adjusted for cost in a number of specific areas consistently across the plan:

- data - where Ofgem considered there were issues with the data submitted we adjusted accordingly, for example the issues we identified included:
  - arbitrary allocation of cost data to the proposed unit cost
  - incorrect allocation of costs to the proposed unit cost
  - incorrect volume of work included in the unit cost calculation
  - contradictory data in NGGT submissions
  - errors in NGGT calculations
- scope - where NGGT used outturn data to justify its proposed unit cost and we consider there was additional scope of works contained within the data we:
  - adjusted costs to reflect the additional scope where we were able to do so
  - removed the data point where we were unable to accurately determine a cost for the additional scope
- contracting - where NGGT had presented limited evidence of market testing we adjusted costs to reflect the potential efficiencies to be gained from

competitive tendering. Where NGGT presented evidence of service exchange contracts currently in place with original equipment manufacturers (OEMs), we accepted these costs

- averaging method - where the distribution of the data set was skewed we used the median value in determining the unit cost to avoid lending weight to extreme values (costs) that risk setting a unit cost that was not typical of the work routinely undertaken.

3.176 Further to this, where NGGT had not provided cost justification for some submitted unit costs we did not disallow these costs, because overall NGGT had submitted a proportionate amount of justification for its asset health plan. However, we considered it inappropriate to allow these unjustified costs in full. Therefore, we made cost adjustments of the same magnitude across each project theme, as we expect the same efficiencies to be delivered within these other costs.

3.177 When extrapolating our cost reduction to unjustified costs we have used the percentage difference between the costs we assessed and our proposed view. Where NGGT provided updated cost information, which we accepted, we used this to calculate the percentage reduction instead of the original Business Plan submission. Further details are included in our confidential technical annex for asset health.

3.178 To provide an additional level of assurance, Ofgem also engaged consultancy support to validate the approach to cost assessment and its findings.[82]

3.179 The review conducted by our consultants, Atkins, was supportive of our approach and they found the proposed adjustments to costs to be appropriate in most cases. Where they found issues with our proposed adjustments, we reviewed our own assessment and updated our approach where appropriate.

3.180 Atkins have concerns with respect to the quality of the data underpinning NGGT's proposed cost allowances. They concluded that while our proposed cost adjustments were appropriate, it was difficult to determine the accuracy of the baseline upon which these adjustments were made. This was due to the manner in which NGGT had used SAP data dumps to justify their costs and low samples of

[82] GT technical annex - asset health unit cost review.

work volumes completed in RIIO-GT1. Atkins also questioned the suitability of some interventions for funding on a unit cost basis.

3.181 Ofgem also have concerns with the level of information, which NGGT were able to provide in order to justify its RIIO-2 Business Plan. We intend to review the ongoing reporting requirements and increase the granularity of the data NGGT are required to provide during RIIO-GT2. We also propose to work with NGGT to understand its current data management processes and how it intends to improve them during RIIO-GT2. Our ambition is that NGGT will be in a position to provide all of the required data to support any re-opener submissions and its RIIO-GT3 Business Plan.

Cost confidence

3.182 We have separately assessed cost confidence from a volume perspective and a unit cost perspective as part of our overall assessment of cost confidence for the asset health plan. In each case, we have formed a view of confidence based on our ability to determine the appropriate volumes and unit costs based on information provided by NGGT.

3.183 When assessing confidence we considered any costs where we have high-confidence in both volume and unit cost as high-confidence costs. If our confidence in either the volume or unit cost confidence were low then we considered these costs to be lower-confidence for the purposes of calculating the sharing factor.

3.184 Where we had good quality historical data and large enough datasets from RIIO-1 and we consider historical costs to be a good indicator of future costs, we classified these as high-confidence costs. We also considered costs to be high-confidence when NGGT's submitted unit costs were based on a sufficient volume of actually incurred costs and we have confidence historical actual costs are likely to be reflective of future costs. Furthermore, we considered costs high-confidence when they were the result of a robust competitive tendering process.

3.185 We viewed costs to be lower-confidence when we did not have enough historical actual data to substantiate the robustness of, and were unable to independently verify, NGGT's submitted costs. For example, lower-confidence costs include those estimated by NGGT's in-house estimation team that were not supported by actual cost data; costs indirectly extrapolated from other projects, costs for projects at

an immature stage of development, and costs based on single third-party contractor quotations.

BPI Stages 3 and 4

3.186 We also propose costs subject to Stage 3 penalty where they are lower-confidence and poorly justified. There were no instances where NGGT was eligible for a reward because NGGT's forecast did not reduce our view of costs and we have reduced costs relative to NGGT's submission. Additionally, NGGT has failed the BPI Stage 1 Minimum Requirements assessment.

3.187 When calculating the asset health costs subject to a BPI stage 3 penalty we have split the calculation up into two stages, a volume stage and unit cost stage. Each stage is calculated independently to ensure that we do not unfairly penalise NGGT.

Project theme – valves

3.188 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the Valves project theme, the details of which are outlined in this section. Table 19 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 19 Proposed allowances for valves

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Valves	63.15	1.49	10.83	50.83	No

Volume assessment

3.189 NGGT proposed £63.15m of spend for 759 interventions associated with refurbishment and replacement works associated with valves, actuators, vents and seals. The objective of this investment is to mitigate against asset deterioration to ensure that the risk associated with valve assets is maintained at a manageable level over RIIO-GT2.

3.190 We accept NGGT's proposals except for vent and sealant lines refurbishment which we propose to remove all 144 volumes (£1.49m). For these interventions NGGT had requested funding to both repair and then replace the same defects because

they has assumed that the repair would be unsuccessful and a repair would still be necessary. We propose to allow the remaining 615 volumes.

Cost assessment

3.191 NGGT provided cost data in support of £40.48m of the total £63.15m requested funding. We accepted the evidence provided in the form of outturn data from historical projects, however, we propose to make several downward adjustments to proposed unit costs for the following reasons:

- where we considered additional scope of works were included within the costs and funded elsewhere in the plan
- where we did not consider costs to be representative of typical interventions and NGGT had made no attempt to justify any atypical additional costs.

3.192 Where unit costs were provided with no cost justification, we extrapolated the outcome of our cost assessment to those costs within the project theme to determine an efficient unit cost for each intervention type proposed.

Cost confidence

3.193 Overall, our volume assessment considered the valves costs as high-confidence as they were based on actual condition data. However, the evidence for the refurbishment of vent and sealant lines was considered lower-confidence because NGGT had not proposed an efficient method of resolving the defects.

3.194 NGGT provided several cost papers by way of evidence to support its cost submissions and we accepted this as justification, but we could only consider costs associated with non-return valve overhauls for a high-confidence classification as we found several issues with the data provided for the remaining costs. Furthermore, the sample size was low relative to both RIIO-GT1 delivery and forecast RIIO-GT2 volumes, and the limited sample provided demonstrated a high degree of variability in costs, giving us low confidence in our ability to use that data to set efficient allowances.

BPI Stages 3 and 4

3.195 Our volume assessment found the vent and sealant lines poorly justified because NGGT did not provide a logical rationale for the inclusion of the double counted

work. We therefore consider our proposed cost reduction of £1.49m subject to Stage 3 penalty.

3.196 We also consider NGGT should have been able to provide a more representative sample of RIIO-GT1 evidence in support of the unit cost submission for valves, particularly considering the volume of work being proposed in RIIO-GT2, we therefore consider these costs to be poorly justified. Consequently, we propose all of our £10.45m of lower-confidence cost reduction subject to Stage 3 penalty.

Project theme – compressors

3.197 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the Compressor project theme, the details of which are outlined in this section. Table 20 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 20: Proposed allowances for compressors

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Variable Speed Drive	15.79	13.97	0.10	1.72	No
Gas Generator Power Train	89.39	23.15	6.48	59.76	No
Compressor	7.08	-	0.39	6.68	No
Vent System	1.42	-	0.08	1.35	No

Volume assessment

Variable speed drive

3.198 There are 61 Gas Generator (Gas Turbine) powered Compressor Trains and 9 Electrically powered Compressor Trains in the NGGT compressor fleet. Electrically powered Compressor Trains are driven by Electric Variable Speed Drives (VSDs). Electric VSDs are an alternative to Gas Turbine driven gas compressors which make up the majority of the NGGT gas compressor fleet. There are nine VSDs installed across seven compressor sites.

3.199 The Electric Variable Speed Drives sub-section has a proposed spend of £15.79m for a total of 21 interventions across 10 different asset categories (multiple interventions per VSD). We propose to remove 17 interventions (£13.97m) from NGGT's baseline request and allow the remaining four.

3.200 These volume reductions include removing all minor refurbishment as these interventions were double counted in the Compressor Breakdown budget. The proposed replacement of two VSDs at Lockerly (eight interventions) that make up the bulk of the reduction in spend, have not been justified by NGGT. Further options assessment, inspections and assessment of future needs at the Lockerly site is needed before the most efficient option can be determined.

Gas generator power train

3.201 Currently NGGT has 61 operational Gas Generator Power Trains across 23 sites. The Gas Generator Power Train sub-section has a proposed spend of £89.39m for a total of 305 interventions. We propose to remove 107 (£23.15m) interventions from NGGT's baseline request and allow the remaining 198.

3.202 These interventions are largely focused on overhauls, but also include fuel gas conditioning skid and budget for breakdowns.

3.203 We propose to remove 23 interventions relating to vent systems from the breakdown budget as we consider these intervention volumes are covered in the separate EJP relating to vent systems. We also proposed to remove a further 71 interventions from the breakdown budget because they're not specifically related to breakdowns.

3.204 We are also proposing to remove five Fuel Gas Condition Systems, six Gas Turbines and two Power Turbines. The removed volumes present low value investments as they are on assets that are expected to be decommissioned, have low forecast operating hours, not predicted to operate past 2030 and/or are interventions brought forward from RIIO-GT3. Therefore, we do not think the investments represent value for money for the consumer.

Compressor

3.205 NGGT proposed to conduct 20 interventions across five sites on the compressor assets for £7.08m. This is to remediate known issues and prevent asset deterioration that could increase the risk on safety and operations. Our view is to allow all 20 interventions.

Vent system

3.206 NGGT proposed to carry out 25 interventions at a cost of £1.42m on vents. This work is based on defects found during routine maintenance on the primary assets,

which may lead to increased safety risk and site unavailability. Due to the safety and availability implications of no intervention, our view is to accept all 25 interventions.

Cost assessment

3.207 NGGT provided cost data in support of £76.36m of the total £113.69m requested funding. We accepted the evidence provided in the form of OEM service exchange contracts, supplier quotations and outturn data for Rolls Royce Avon Gas generators, however, we propose to make several downward adjustments to proposed unit costs for the following reasons:

- where NGGT provided contract evidence, we found the costs to be payable in the forecast year incurred and adjusted these costs to 18/19 prices
- we considered the service exchange contract evidence more representative of forecast costs than historical costs in the areas where both were presented and used this in setting allowances due to NGGT's claimed efficiencies in this area[83]
- where NGGT have only provided a quotation from a single supplier we considered this limited evidence of market testing and expect efficiencies will be realised from competitive tendering processes
- where we found costs had been misallocated from gas generator projects.

3.208 We found no issues with the evidence for compressor breakdown unit costs and propose to allow these costs in full (£9.65m).

3.209 Similarly, we found NGGT's forward exchange rate forecasts used to convert their contract prices to be in line with market data[84] and made no adjustment for this.

Cost confidence

3.210 Overall our volume assessment considered the compressor costs as high-confidence as they were based on forecast effective running hours. However, the evidence for the compressor breakdowns and fuel gas condition skid installations was considered lower-confidence because NGGT had included unrelated

[83] NGGT Annex A14.10 Compressor Train Engineering Justification Paper - paragraph 7.32.
[84] Based on FX Forward Rates from Bloomberg (FXFR function).

interventions for compressor breakdowns and presented conflicting data for the gas conditioning skid installations.

3.211 From a cost perspective, NGGT provided several cost papers by way of evidence. We accept this justification and consider this evidence from service exchange contracts and historical outturn costs to be high-confidence. Where NGGT had provided cost evidence based on limited market testing we consider this lower-confidence.

BPI Stages 3 and 4

3.212 As our volume assessment found NGGT had included unrelated interventions for compressor breakdowns and presented conflicting data for the gas conditioning skid installations, we consider these poorly justified and propose our cost reductions of £7.72m subject to Stage 3 penalty.

3.213 We consider costs where NGGT provided limited evidence of market testing to be poorly justified, as NGGT should have been able to provide evidence of outturn costs or further tendering to support their proposed unit costs. We therefore propose all of our £1.77m of lower-confidence cost reductions subject to Stage 3 penalty.

Project theme – pipelines

3.214 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the Pipeline project theme, the details of which are outlined in this section. Table 21 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 21: Proposed allowances for pipelines

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Pipeline Coating & CP	131.44	23.50	5.92	102.02	No
Depth of Cover	1.08	-	0.13	0.95	No
Impact Sleeves	4.64	-	0.83	3.81	No
Pig Traps	4.27	0.28	0.49	3.50	No

Volume assessment

Pipeline coating & CP

3.215 NGGT proposed 4,641 interventions and spend to protect 5,041km of pipeline at a cost of £131.44m for Pipeline Coating and Cathodic Protection (CIPS) in RIIO-GT2. We propose to remove 158 interventions and spend on the equivalent of 2,917km pipeline protection systems (£23.50m) from NGGT's request and allow the remaining volumes.

3.216 The investment objective is to maintain the pipelines (generally in terms of wall thickness) and the corrosion protection system (CP) so that they are fit for purpose and compliant with various industry standards.

3.217 We propose a reduction in volumes for three of the 11 asset categories. In relation to CIPS for Capital Refurbishment, our review of NGGT's internal policy to calculate the length of pipeline found that only 2,124km of NGGT's proposed 5,042km of interventions are justified. This is due to an error in NGGT's calculation and reduces the proposed cost of £3.15m by £1.33m. This accounts for the majority of the volume reduction in this section.

3.218 Our proposal is to accept the 318 CIPS work to fix known defects, however, remove the 111 interventions driven by future outages instead of condition data. Our view is there is a lack of evidence of defects associated with these interventions. This reduces NGGT's proposed costs of £59.29m by £15.33m.

3.219 Of the 241 proposed In-Line Inspection Defect Digs, we consider 46 interventions brought forward from RIIO-GT3 into RIIO-GT2 due to outage windows not to be justified because of a lack of inspection data supporting the need for the digs. We propose to remove these 46 interventions, £6.35m of NGGT's £33.29m request, and allow the remaining 195.

Depth of cover

3.220 NGGT proposed to spend £1.08m on 317 interventions to maintain the required depth of ground cover over buried pipeline. This is primarily to protect the pipeline from damage and to comply with The Pipelines Safety Regulations 1996[85] (PSR). Therefore, we propose to accept the 317 proposed volumes.

[85] Pipelines Safety Regulations (1996).

Impact sleeves

3.221 NGGT proposed to spend £4.64m on 62 interventions on pipeline impact sleeves. This is based on defects found during routine maintenance on the primary assets, which may lead to increased safety risk and site unavailability.

3.222 The submitted EJP provided little detail on how these assets are inspected and how defects are identified and the specific nature and causes for these defects. NGGT provided some of this information through supplementary question responses but also uncovered errors in the proposed volumes. As a result of these errors, NGGT has proposed to significantly increase the intervention volumes but we did not consider this to be justified based on the uncertainty associated with the volumes and the late timing of submission. Therefore, we propose to reject the updated volumes provided by NGGT and accept the 62 interventions proposed in its RIIO-2 Business Plan.

Pig traps

3.223 NGGT has proposed a total spend of £4.27m across 93 interventions for a combination of remediation to known defects and major inspections requested relevant to pig traps as a part of the pipelines EJP. We propose to remove two volumes, £0.28m, as these assets are due for decommissioning and allow the remaining 91.

Cost assessment

In line inspections (pipeline coating & CP)

3.224 In our assessment of the efficient costs for in line inspections, due to the skewed nature of the data set, with a high number low cost inspections clustered together and a few inspections at a much higher cost. Ofgem adjusted the efficient costs to the median value, recognising the impact of a small number of high cost interventions to inflate the average unit cost.

3.225 We do however, recognise there are a number of potential drivers of cost such as pipelines diameter, length and pig trap type that present opportunities to potentially model these costs in a more accurate, albeit complex manner. We expect NGGT to improve its modelling of these costs and propose to develop our ongoing requirements to reflect this.

Cathodic protection - remote monitoring (pipeline coating & CP)

3.226 NGGT propose to upgrade the CP remote monitoring system in RIIO-GT2 as support for the current 3G network system ends, at a cost of £6.10m revised from £6.70m in their December plan. We agree with the need to undertake this work, however, the scope and solution remains uncertain and we therefore separated this from the main assessment.

3.227 NGGT presented costs based on the original installation of these systems and assumed that the unit cost for delivering the original installation will be comparable with the cost to the upgrade the system to 4G. We don't consider that NGGT has justified funding for this project because of the current uncertainty around the solution.

3.228 We propose to fund this at 30% of the requested allowance based on the view that typically, this is the percentage cost of refurbishment vs replacement. However, we have not extrapolated this adjustment to cost any further through the plan as we consider the issues found unique to this project, therefore, using this as a basis for cost adjustments to other intervention types would be inappropriate.

Replacement of transformer rectifiers (pipeline coating & CP)

3.229 NGGT presented £1.99m of costs for the replacement of transformer rectifiers on the CP system for pipelines, we compared the unit cost to that presented for the replacement of transformer rectifiers on above ground pipework, reasoning that this work is similar in nature. We found significant discrepancies in the unit costs and set the unit cost based on the outturn data provided by NGGT in support of above ground CP defect remediation, which is lower.

Cost confidence

3.230 Our volume assessment considered impact sleeve, depth of cover, watercourse crossings and most of the pig trap costs to be high-confidence as clear reasoning and underlying inspection data was provided by NGGT for this equipment. However, the evidence for digs to repair the pipeline and cathodic protection system, Close Interval Protection Surveys (CIPS) and Pipeline Safety System Regulation (PSSR) inspections of pig traps was considered lower-confidence because there was uncertainty over the need for some of the digs, the volume of CIP surveys required and the extent of pig trap decommissioning.

3.231 NGGT provided several cost papers by way of evidence to support its unit costs. We accepted this as justification and consider the evidence from historical outturn costs to be high-confidence with the exception of cathodic protection remote monitoring costs, which was based on limited market testing and we considered lower-confidence because it had limited value in setting efficient allowances.

BPI Stages 3 and 4

3.232 For the lower-confidence costs, our volume assessment found that NGGT had not demonstrated the need for the proposed volumes and we therefore consider these poorly justified and the cost reduction of £23.50m subject to Stage 3 penalty.

3.233 We consider cathodic protection remote monitoring costs where NGGT provided limited evidence of market testing to be poorly justified, as NGGT should have been able to provide evidence of outturn costs or further tendering to support their proposed unit costs. We propose all of our £3.64m of lower-confidence cost reductions subject to Stage 3 penalty.

Project theme – plant and equipment

3.234 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the plant and equipment project theme, the details of which are outlined in this section. Table 22 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 22: Proposed allowances for plant and equipment

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Above Ground Pipework, Cladding and CP Systems	130.78	3.86	12.49	68.65	Yes
Filters, Scrubbers and Preheaters	17.16	-	1.97	9.11	Yes
Pressure Reduction, Flow Control and Slamshut Systems	8.51	-	0.98	4.52	Yes

Volume assessment

Above ground pipework, cladding and CP systems

3.235 The plant and equipment assets comprise equipment on 23 compressor stations and 504 Above Ground Installations (AGIs). For above Ground Pipework, Cladding and Cathodic Protection Systems sub-section NGGT proposed a spend of £130.78m for a total of 832 interventions.

3.236 Errors were found in the intervention calculations for the main spend areas in this subtheme. NGGT subsequently proposed new intervention volumes to resolve these errors however questions remained about the interaction between unit costs and intervention volumes. Given the materiality of the spend in this area we do not have sufficient confidence to set a volume of baseline interventions for this subtheme.

Filters, scrubbers and preheaters

3.237 NGGT has proposed to spend £17.16m on 221 interventions for the replacement of filters, scrubbers, strainers and preheaters to comply with regulatory and safety requirements. NGGT have provided sufficient justification for the number of interventions it has proposed and we are not proposing any intervention volume changes proposed for this business case.

Pressure reduction, flow control and slamshut systems

3.238 In this EJP, NGGT proposes to spend £8.51m for 296 interventions, which are a combination of remediation of known defects and major inspections requested relevant to pressure reduction, flow control and slamshuts. Our view is to accept the proposed intervention volumes.

Cost assessment

3.239 NGGT provided cost data in support of £104.61m of the total £156.44m requested funding. Ofgem have accepted this information, however, the method used to build three of the unit cost papers is a 'blended'[86] type unit cost. The fourth justification paper is a bottom-up estimate for work NGGT has not previously undertaken to any great extent, and for which NGGT did not consider their

[86] 'Blended' unit costs are unit costs whose make up comprises a number of differing units or scales, aggregated in some way to give a point unit cost. For example, a point unit cost for site painting comprising small, medium and large sites receiving either a full, partial or patch paint.

historical cost data to be robust. We do not consider it appropriate to propose baseline view of efficient costs for these costs and by extension the remaining costs within this project theme. However, we recognise the need for NGGT to undertake this work and accept that delaying defect remediation and painting work will only worsen the current situation and inevitably lead to increased costs to consumers.

3.240 We therefore propose to provide a proportion of ex ante funding for this work subject to a Year 3 re-opener window. Ofgem propose to apply the adjustment to volumes and reduce costs at the overall level of cost adjustment for the remainder of the asset health plan. We then propose to provide baseline allowances for the remaining 60% of costs. This approach will allow NGGT to begin the programme of work and build up robust cost evidence to present as part of the re-opener process. We propose to review both the outturn costs for years 1 and 2 ex post and the remaining forecast costs for years 3-5 as part of our re-opener assessment, the final allowance will be subject to TIM. Our consultation position on this Asset Health re-opener is set out in the UM Chapter.

3.241 We propose this approach to protect both consumers and NGGT from the uncertainty in the costs associated with bringing the above ground asset population up to standard. We expect NGGT to build a robust set of cost data, reportable through the ongoing regulatory reporting and monitoring process that will allow us to assess costs and set efficient allowances during the re-opener window, for the remainder of the RIIO-GT2 price control and beyond.

Cost confidence

3.242 Since much of the evidence provided in support of this project theme does not give us sufficient information to set efficient cost allowances, we consider the entire theme to comprise lower-confidence costs.

BPI Stages 3 and 4

3.243 In proposing to provide a proportion of baseline funding and an associated UM to manage the uncertainty surrounding these costs in RIIO-GT2, we have excluded them from our calculation of Stage 3 penalty for the purposes of the BPI. We have, however, included the baseline allowance element as lower-confidence in our calculation of NGGT's confidence dependent incentive rate.

Project theme – civils

3.244 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the civils project theme, the details of which are outlined in this section. Table 23 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 23: Proposed allowances for civils

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Pipe Supports, Pits & Ducting	39.29	6.23	7.01	26.05	No
Security & Fencing, Access & Buildings	33.69	22.12	2.32	9.25	No
Treatment & Drainage, Tanks & Bunds	6.56	0.86	1.03	4.68	No

Volume assessment

Pipe supports, pits and ducting

3.245 NGGT has proposed to spend £39.29m on 1,757 interventions for monitoring and remediation works associated pipe supports, pits and ducting that support the operation of the primary assets. We propose to remove 42 (£6.23m) of proposed volumes for this business case and allow the remaining 1,715.

3.246 This volume reduction is associated with the re-lifing of Pipe Supports & Pits at Compressor Sites (Hydro Demolition). In-line with NGGT's own policy our view is that these assets do not require major repairs given their observed condition.

Security and fencing, access and buildings

3.247 NGGT has proposed to spend £33.69m on 1,644 interventions including, monitoring and remediation works associated with security, fences and gates, access roads, buildings, platforms and stairs. We propose to change the work mix NGGT proposed, removing 217 interventions (£22.12m) and allowing 1,394 for proactive re-lifing of primary assets included in NGGT's CBA as Option 2.

3.248 We consider NGGT's proposal to use a risk based re-lifing approach (CBA Option 5) to be an overinvestment, as it would dramatically increase the condition of

assets over and above the current asset condition profile, which is assumed to be acceptable from a risk management perspective.

3.249 The removed interventions are associated with asset surveys and minor repairs on assets that have minor defects, therefore we conclude that the removal of these interventions leaves a scheme of works that still achieves NGGT's aim of maintaining a steady risk profile at a much-reduced cost. Overall, our view is that the allowed volume will deliver the work that is necessary and justifiable, as well as minimises proactive interventions on assets that are in an acceptable condition.

Treatment and drainage, tanks and bunds

3.250 NGGT has proposed to spend £6.56m on 730 interventions for monitoring and remediation works associated with sewage treatment, tank and bund assets. Our view is to remove 299 interventions (£0.86m) from NGGT's baseline request and allow the remaining 431.

3.251 Our conclusion is that the intervention programme proposed by NGGT is suitable for maintaining the environmental, safety and operational risks associated with the deterioration of the assets in the scope of this business case. This is with the exception of the asset monitoring interventions that are considered unnecessary.

3.252 The 299 removed interventions are associated with asset surveys and monitoring on assets that have minor defects and this work would just re-confirm the need for the proposed remediation interventions. Based on this, we conclude that the removal of these interventions achieves NGGT's aim of maintaining a steady risk profile at a slightly reduced cost. This still allows for major repairs associated with the assets that have significant defects.

Cost assessment

3.253 NGGT provided cost data in support of £48.80m of the total £79.54m requested funding. We accepted the evidence provided in the form of outturn data from historical projects and supplier quotations, however we did not accept NGGT's revised evidence based on SME views where it had previously provided outturn data and had provided no justification for this change. We propose to make several downward adjustments to proposed unit costs for the following reasons:

- for pipe supports, pits and ducting we adjusted costs where we considered additional volume had been delivered for the costs presented, inconsistencies

existed in the unit cost calculations and where NGGT provided conflicting cost evidence
- for security and fencing, access and buildings we are proposing to accept NGGT's proposed unit costs with a marginal adjustment for a data anomaly.

Cost confidence

3.254 Our volume assessment considered 34 of the 46 intervention types to be high-confidence as NGGT provided inspection records and data for the related assets. However, there were a number of areas we considered to be comprised of lower-confidence costs because of:

- over-scoping of work for pipe supports and uncertainty around number of assets on each site
- unnecessary investment for fences and gates based on the current condition of the asset base
- low quality of evidence for the refurbishment of roads and paths.

3.255 NGGT provided several cost papers in support of its unit costs and we accepted this as justification. We considered costs submitted for the refurbishment of road and paths high-confidence as they were based on robust outturn data. However, there were a number of areas we considered to be comprised of lower-confidence costs:

- fences and gate refurbishment, due to NGGT blending different intervention types into a single unit cost
- pipe supports, due to a very low sample of outturn costs relative to proposed RIIO-GT2 volume and limited market testing where this was provided.

BPI Stages 3 and 4

3.256 As our volume assessment found evidence of over scoping of work and uncertainty over the number of assets for pipe supports, unnecessary investment for fences and gates and poor quality data for refurbishment of roads and paths, we consider these to be poorly justified and therefore propose the cost reduction of £28.96m is subject to Stage 3 penalty.

3.257 We consider NGGT should have presented its submission at the granular level to increase transparency of costs for fence and gate refurbishment but chose not to do so, for this reason we consider these to be poorly justified. We also consider

costs for pipe supports where NGGT provided limited evidence of market testing to be poorly justified, as NGGT should have been able to provide evidence of outturn costs or further tendering to support their proposed unit costs. We therefore propose all of our £10.39m of lower-confidence cost reductions subject to Stage 3 penalty.

Project theme – electrical

3.258 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the Electrical project theme, the details of which are outlined in this section. Table 24 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 24: Proposed allowances for electrical

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Site Electrical Systems	23.24	3.98	1.36	17.95	No
Standby Power Supplies	5.24	2.47	0.14	2.63	No

Volume assessment

Site electrical systems

3.259 NGGT has proposed to spend £23.24m for a total of 209 interventions on Site Lighting, Switchboards, Standby Generators, Switchgear and Transformers. These interventions are a combination of refurbishment and replacement actions based on a risk based re-lifing strategy. We propose to allow 331 interventions, an increase in volumes, but with an associated reduction of £3.98m in cost.

3.260 Our proposed reduction is solely associated with lighting where we disagree with NGGT's risk based re-lifing strategy and consider it appropriate for a fix on fail approach to be taken. This approach includes more refurbishment and repairs rather than full asset replacements, which drives the increase in intervention volumes.

3.261 We also highlight that NGGT deferred lighting column replacement interventions for five sites from RIIO-GT1 to RIIO-GT2. Had interventions been progressed in RIIO-GT1, the overall number of replacement interventions would have been cut

by 30% without a need for considering a mixed investment strategy. We consider this to support our view that risk based re-lifing would represent an overinvestment for these assets.

3.262 Our view is to allow the risk based re-lifing strategy for the other interventions presented in this EJP.

Standby power supplies

3.263 NGGT has proposed to spend £5.24m to carry out 117 interventions on UPS, Chargers, NiCad batteries and VRLA batteries. We propose to remove 43 intervention (£2.47m) from NGGT's request and allow the remaining 74.

3.264 These interventions are a combination of refurbishment and replacement actions based on a risk based re-lifing strategy. Intervention decisions are a balance of proactive actions that consider asset condition with some allowance made for reactive fix on failure.

3.265 Our proposal is to allow all interventions associated with batteries and all replacements of UPS and Chargers exceeding 20-year asset life. This results in a reduction of 42 interventions for assets less than 20 years old. Based on the information provided, we conclude that the removal of these interventions achieves NGGT's aim of maintaining a steady risk profile at a reduced cost.

3.266 No change is proposed to battery replacements and interventions associated with refurbishments since these are low cost and low volume interventions and the interventions have been sufficiently justified through the information NGGT have provided.

<u>Cost assessment</u>

3.267 NGGT provided cost data in support of £14.49m of the total £28.48m requested funding. We accepted the evidence provided in the form of outturn data from historical projects and supplier quotations, however, we propose to make several downward adjustments to proposed unit costs for the following reasons:

- where NGGT presented multiple supplier quotations as evidence of competitive tendering, we considered the lowest cost quote to be appropriate, rather than the average

- where NGGT provided limited evidence of market testing and we consider that efficiencies will be realised from competitive tendering processes.

Cost confidence

3.268 Our volume assessment found issues with the condition forecasting methods used in the Electrical EJP and reductions to volumes have been made to 24 of the 49 intervention types in this theme and therefore consider the costs to be lower-confidence.

3.269 NGGT provided several cost papers by way of evidence and we accepted this as justification. Where NGGT had provided cost evidence based on limited market testing we considered this lower-confidence. For site lighting NGGT provided evidence of competitive tendering for a number of sites, however, the method used to extrapolate these costs to other sites to derive a per site unit cost was not robust enough to set efficient unit cost allowances with confidence and therefore these costs were considered to be lower-confidence.

BPI Stages 3 and 4

3.270 Inconsistencies found during our volume assessment resulted in material changes to the final allowance for this theme. As a result of the scale of the changes driven by the forecasting methods used, we consider these volumes to be poorly justified and propose that the cost reduction of £6.40m is subject to Stage 3 penalty.

3.271 Where NGGT provided limited evidence of market testing for its proposed costs we consider these to be poorly justified, as NGGT should have been able to provide evidence of outturn costs or further tendering to support its proposed unit costs. We propose all of our £1.50m of lower-confidence cost reductions subject to Stage 3 penalty.

Project theme – cabs

3.272 We undertook assessment of both volume and cost information to reach a view of efficient allowances for the Cabs project theme, the details of which are outlined in this section. Table 25 below summarises the outcome of each aspect of our assessment, alongside our proposed allowance.

Table 25: Proposed allowances for cabs

Sub-Theme	NGGT Proposed Baseline	Volume Adjustment (£m)	Cost Adjustment (£m)	Ofgem Proposed Baseline	Ofgem Proposed UM
Cab Infrastructure	24.33	9.18	(3.65)[87]	11.28	Yes
Fire Suppression Systems	6.96	1.18	0.60	3.10	Yes

Volume assessment

Cab infrastructure

3.273 NGGT proposed to spend £24.33m on 97 interventions on remediating known defects on cab infrastructure assets. We propose to remove 23 interventions (£9.18m) from NGGT's request and allow the remaining 74.

3.274 NGGT proposed 17 interventions associated with assets which are proposed to be decommissioned and in some instances, currently not operational. An additional six interventions have been identified that are considered to constitute an overinvestment due to inconsistent approach to justifying interventions based on asset condition grading.

Fire suppression systems

3.275 NGGT has proposed to spend £6.96m to carry out 29 reactive interventions to known defects identified on fire suppression systems by surveys. We propose to remove 12 interventions (£1.18m) from NGGT's request and allow the remaining 17.

3.276 Our conclusion is that this proposal would constitute an overinvestment as it proposes several interventions that are associated with primary assets that are due to be decommissioned or have very low predicted run hours over RIIO-GT2. We therefore propose to remove 12 interventions associated with these assets. Overall, this delivers the work that is necessary and justifiable and meets the investment objective of maintaining the risk.

Cost assessment

3.277 NGGT provided cost data in support of £17.11m of the total £31.29m requested funding. We accepted the evidence provided in the form of outturn data from

[87] NGGTs additional cost evidence resulted in prosed costs for Cabs increasing relative to the December Business Plan submission.

historical projects. However, because of this, NGGT's costs increased by £9.28m compared to its original Business Plan submission. Our assessment of the evidence provided found:

- that it was difficult to disaggregate the various work elements (differing intervention types) contained within the historical projects presented
- variation in scope between projects that were presented as comparable intervention types
- in one instance NGGT had used the same project data to justify both replacement and refurbishment costs.

3.278 We propose that it is not appropriate to set unit cost allowances in this area of the plan based on the information presented. This is due to the quality of the historical cost data, lack of defined scope for the varying intervention levels and the resulting risk to consumers of outturn costs being materially lower than forecast. However, our volume assessment has identified a need for this work to be undertaken and we recognise that many of the Cab infrastructure assets are nearing the end of their original design life and therefore some level of intervention is required.

3.279 We therefore propose to provide a proportion of ex ante funding for this work subject to a Year 3 re-opener window. Ofgem propose to apply the adjustment to volumes and reduce costs at the overall level of cost adjustment for the asset health plan overall. We then propose to provide baseline allowances for the remaining 60% of costs. This approach will allow NGGT to begin the programme of work and build up robust cost evidence to present as part of the re-opener process. We propose to review both the outturn costs for years 1 and 2 ex post and the remaining forecast costs for years 3-5 as part of our re-opener assessment, the final allowance will be subject to TIM. Our consultation position on this Asset Health re-opener is set out in the UM Chapter.

3.280 Ofgem consider this approach protects both consumers and NGGT from the uncertainty in the costs associated with Cab infrastructure work. We expect NGGT to build a robust set of cost data, reportable through the ongoing regulatory reporting and monitoring process that will allow Ofgem to assess costs and set efficient allowances during the re-opener window, for the remainder of the RIIO-GT2 price control and beyond.

Cost confidence

3.281 Since the evidence provided in support of this project theme does not give us sufficient information to set efficient cost allowances, we consider the entire theme to comprise lower-confidence costs.

BPI Stages 3 and 4

3.282 Since our intention is to provide a proportion of baseline funding and an associated UM to manage the uncertainty surrounding these costs in RIIO-GT2, we have excluded these costs from our calculation of Stage 3 penalty for the purposes of the BPI. We have, however, have included the baseline allowance element (£14.38m) as lower-confidence in our calculation of NGGT's incentive rate.

Proposed outputs for asset health

3.283 We propose to hold NGGT to account for the delivery of work using two PCDs. Most of the asset health plan is included within the NARM mechanism, with the remainder linked to NGGT's proposed PCD for Non-lead assets. The breakdown is covered in the Table 26 below.

3.284 We also propose an UM for asset health which is detailed in Chapter 4 of this document.

Table 26: Proposed outcomes for asset health

Output	Value (£m)
NARM	315.53
Non-lead assets	48.07
No associated output	26.08
Total	**389.68**

Asset health PCD - non-lead assets

Asset health - non-lead assets	
Purpose	PCD to cover asset health spend that is not covered by NARMS
Benefits	The proposed PCD will ensure consumers are protected from any non-delivery of RIIO-GT2 allowed volumes for non-lead assets

Background

3.285 The majority of NGGT's asset health plan is covered by NARM[88], work that is necessary to maintain the safety and reliability of the network. The remainder is other work such as civils and electrical investment, which is necessary for the protection of and safe access to operational network assets. As this is not covered by the NARM mechanism, NGGT has proposed a PCD to measure the delivery of this output.

3.286 NGGT has proposed to link costs of £87m to this PCD, aiming to:

- re-life 26 site compressor cabs
- re-life 76 site fences
- refurbish 922 pipe supports
- refurbish 245 pits
- refurbish 75 site roads
- refurbish 12 site lighting systems.

3.287 Ofgem has assessed NGGT's asset health plan, which includes this work, and formed a view of efficient costs and volumes. We propose that these costs and volumes form the basis for outputs in this PCD.

Consultation position

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers the proposed volumes of interventions for non-lead assets
Expected timing of delivery	End of RIIO-GT2
Totex baseline allowances	£48.07m (with Cab Infrastructure work subject to Asset Health UM)
Accountability mechanism	Annual Regulatory Reporting Pack (RRP)
Proposed approach to allowance clawback	Ex post assessment at close out

Rationale for consultation position

3.288 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the

[88] Core Document – Chapter 5.

full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.289 Rather than measure outputs at a site level, we propose to measure the delivery of this PCD at the granular level of specific interventions, as proposed in NGGT's Business Plan, EJPs and Business Plan Data Template (BPDT). We consider this approach will achieve the desired objective to protect consumers, while increasing the flexibility for NGGT to respond to emerging needs on the network, by allowing them to disaggregate the outputs across multiple sites where required.

3.290 We also propose to set outputs at the levels of our proposed volumes and costs. Due to commercial sensitivity we propose to issue these detailed outputs to NGGT on a confidential basis.

3.291 In NGGT's 10 year proposed investment plan, Ofgem recognise there may be outputs funded in RIIO-GT2 that are not fully delivered until T3. We propose to set the PCD outputs at the level of the allowed RIIO-GT2 volumes and funding, and will consider any inflight projects as part of RIIO-GT2 close-out.

Consultation questions

Q25. Do you agree with our assessment approach to asset health work, including our proposal to use a combination of baseline funding, PCDs and a UM for the various cost sub-categories?

Q26. Do you agree with our proposed approach for costs confidence, including our view and rationale for high and low confidence cost categories and costs subject to a BPI Stage 3 penalty?

Other asset health costs

3.292 NGGT submitted a number of specific Asset Health projects within their Business Plan, which we have assessed these individually. Our proposed allowances are set out in Table 27 below.

Table 27: Proposed allowances for other asset health costs

Cost Area	NGGT Proposed Baseline	Ofgem Proposed Baseline	Ofgem Proposed UMs
St Fergus Subsidence	4.00	-	Yes
Bacton	4.71	6.97	Yes

Cost Area	NGGT Proposed Baseline	Ofgem Proposed Baseline	Ofgem Proposed UMs
King's Lynn Subsidence	1.05	1.05	Yes
Stopples	10.00	10.00	No
GRAID	18.30	10.02	No
Decommissioning	99.03	81.80	No
Total	**137.09**	**109.84**	

St Fergus subsidence

3.293 NGGT requested a total of £10m to address subsidence issues at St Fergus, £4m of baseline funding and proposed £6.00m as a UM.

3.294 We propose to remove the £4m baseline funding request because NGGT has provided no justification to support the costs for this project.

3.295 We accept NGGT's proposed UM for these costs and we intend to assess these costs during RIIO-GT2 once the options and costs have been developed. We also propose to combine NGGT's proposed UM with the St Fergus compressor emissions UM, described in the Compressor Emissions section of this Chapter. Our view is that it is appropriate for NGGT to consider these subsidence issues as part of its options development for its compressor investment as it may impact the preferred option.

Bacton

Background

3.296 The Bacton terminal was constructed in 1970 and brings in flows from a number of North Sea gas fields, onto both the NTS and the local Gas Distribution Network.

3.297 More recently, the terminal has been modified to host interconnectors to both the Netherlands and Belgium.

3.298 Due to the age of the site and its coastal location, NGGT has encountered issues operating the equipment at site and has already undertaken a significant program of asset replacement during the RIIO-GT1 price control.

3.299 With gas flows forecast to continue at the site for the foreseeable future NGGT are looking to invest at the site to provide an enduring solution and allow the connected terminals to continue to operate into the 2040s.

3.300 NGGT has developed the project through the first project stage, needs case review which considered the following groups of options:

- like for like asset health - replacing all of the equipment on the site on a like for like basis as part of an ongoing piecemeal maintenance programme. The investment would not alter the footprint and would maintain existing capacity and redundancy
- downsized asset health - decommission varying numbers of incomers in line with falling gas flows and invest in an ongoing piecemeal maintenance programme but on a reduced footprint. This approach reduces investment costs but accepts increased constraint costs at the site.
- new build - build a new like for like terminal that maintains existing capacity and redundancy on an area of unused land at the terminal.

3.301 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead option for this project is to construct a new like for like terminal on a brownfield site. NGGT considers that this approach could give long-term benefits over piecemeal replacement of the existing assets.

Consultation position

3.302 Our view is that this project is suitable to progress to the next project phase but do not agree with the lead option proposed in NGGT's Business Plan. Further work is required before an option can be selected, for which we intend to provide a baseline allowance of £6.97m.

Rationale for consultation position

3.303 NGGT has presented flow forecasts which show UKCS supplies to the terminal ceasing by the mid-2030s, after which the terminal would mostly operate to allow flows to and from the interconnectors on the site. We agree there is a long-term need for NGGT equipment to serve the terminals at the Bacton site.

3.304 The age and condition of the assets at the site drives the need for investment and it is common to require major investment at this stage of a terminal life cycle. Given the changing future flows of gas at the site it does not appear to be appropriate to replace the equipment and functionality on a like for like basis and

this investment presents the opportunity to change the site footprint and minimise future Capex and Opex costs at the site.

3.305 NGGT has presented options that reduce the number of assets involved in supporting flows from the UKCS terminals as part of the Stage 1 proposal. However, the CBA shows relatively consistent levels of asset health, valve replacement and site Opex costs for the "Like for Like" and "Downsize Asset Health" options despite relatively major changes to the site footprint between these options. The forecast expenditure in these categories is enough to swing the CBA in favour of NGGT's preferred option and the uncertainty associated with the project scope does not allow an option to be selected at this stage.

3.306 Based on our assessment of NGGT's submission and subsequent discussions, we agree that there is some need to rationalise the asset base at Bacton rather than maintaining the site in its current configuration in perpetuity. We do not agree that NGGT's preferred option of a new brownfield terminal is the most efficient way to achieve this currently based on the work completed and relatively small changes to the CBA could alter the outcome of the options selection process. We would expect NGGT to carry out more in-depth assessment of the need for and the sequencing of asset and valve interventions as well as reviewing assumptions made to inform future Opex costs in subsequent project stages.

3.307 In particular, when progressing to the next development step, NGGT should address the following issues:

- asset stranding – a focus on minimising the risk of asset stranding by refining the options presented and reducing the site asset health spend
- brownfield and Asset Health Opex costs – create credible Opex profiles for all options
- valve investment costs – investigate options that minimise the number of valve interventions for all asset health options in line with predicted UKCS decommissioning dates and demonstrate that the investment programme minimises regret spend.

Proposed outputs

3.308 We propose to hold NGGT to account for the delivery of the Bacton terminal redevelopment by setting a PCD for NGGT to undertake up front engineering and design work, and then by setting funding via a two-stage re-opener, following the

GT Project Assessment Process outlined in the Compressor Emissions section of this document.

Bacton PCD

3.309 NGGT proposed a PCD for Bacton to develop the engineering design for the site and requested a £4.7m allowance for this work. NGGT also requested baseline funding for the project, which would then be adjusted following a re-opener decision by September 2022.

Consultation position

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT delivers finalised Option Selection and conceptual design studies
Expected timing of delivery	April 2022 (Option Select), Aug 2022 (Re-opener)
Totex baseline allowances	£6.97m
Accountability mechanism	RIIO-GT2 Close-Out report
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

Rationale for consultation position

3.310 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.311 We do not agree with NGGT's proposed option of the terminal redevelopment, instead we propose to provide additional funding for NGGT's project development, with a baseline allowance of £6.97m.

3.312 As part of the Option Selection submission from NGGT, we expect to see:

- a refined asset replacement plan that minimises the risk of asset stranding and aims to minimise the cost of interventions
- credible Opex profiles for both the brownfield terminal and asset health options
- options that minimise the number of valve interventions for all asset health options in line with predicted UKCS decommissioning dates
- updated FES and network capability modelled flows in CBAs
- updated breakdown of capital costs and associated risk, project management and other such contingencies in line with RIIO-GT2 EJP guidance.

Bacton UM

Output parameter	Consultation position
Materiality threshold	None
Re-opener window	Aug 2022
Re-opener requirements	NGGT should submit a complete report on the preferred option for Bacton, with a conceptual design study and tendered costs based on the option approved as part of the Option Selection review.
Limits of Applicability	The scope of this proposed Asset Health UM is limited to those assets within the Bacton terminal

3.313 NGGT proposed attaching a re-opener to this investment, and we accept the justification for this due to the uncertainty around the best investment option and efficient costs of delivery.

Links to baseline funding

3.314 In order to allow for further development of the optioneering at Bacton, we are providing a baseline allowance for project development costs, which will then be trued-up as part of this re-opener.

Data provision

3.315 The Bacton re-opener should only refine the cost of the options selection submission and provide an updated breakdown of the capital cost along with the associated risk, project management and other such contingencies. Alongside the important engineering and procurement work completed at this stage, there should be a focus ensuring that the CBA is robust to changes in the FES and network capability flows predicted for the site.

King's Lynn Subsidence

Background

3.316 NGGT has identified issues with bi-directional flow pipelines at King's Lynn compressor station whereby ground movements caused by subsidence are causing stress on the pipework at the site, causing safety, security of supply and environmental risks.

3.317 Supporting information in the submission shows that some of the affected pipework is under three times the acceptable stress levels, and NGGT believes the situation will deteriorate over time.

3.318 To address this issue, NGGT is considering options to replace the bi-directional pipework on the site by building new pipework, underpinning the existing pipework and building new pipework configurations on the site.

3.319 The project is currently at the end of Stage 1, Needs Case Assessment and a project option has yet to be selected. NGGT's lead option for this project is to construct is to build new bi-directional pipework.

Consultation position

3.320 NGGT has requested £1.05m of baseline allowances to carry out further development work, with an UM proposed during RIIO-GT2 to assess the full project costs once the option and costs are fully developed. We agree with this approach and propose that this project should continue to the next development stage, with an allowance of £1.05m given for optioneering and a re-opener mid-way through the RIIO-GT2 price control.

Rationale for consultation position

3.321 Based on the information submitted by NGGT, there has been some movement of the bi-directional flow pipework at King's Lynn compressor station caused by subsidence and NGGT are rightly considering actions to mitigate the risks associated with this.

3.322 In correspondence with NGGT, it has been confirmed that no risk of failure has been considered when undertaking CBA to decide upon the best solution of the site. The CBA assumes that the pipework will fail at some time in the future due to the stress and damage it has already been subjected to.

3.323 The downsides of this CBA are expressed as constraint costs due to loss of supply to the feeders connected to the site – no considerations have been made for safety or environmental consequences of failure of pipeline at the site.

3.324 Of the options presented, underpinning the existing pipework appears the most attractive in terms of capital cost, however NGGT's CBA assumes the pipework will still fail and result in constraint actions.

3.325 Prior to this re-opener, NGGT should look to quantify the rate of deterioration and probability of failure of the pipework to demonstrate the need for investment.

3.326 Additional work should also be done to consider safety and environmental risks of pipeline failure – a more holistic view of consequences and a realistic probability of failure should then guide the justifiable spend in addressing issues at the site.

3.327 NGGT should also continue the optioneering process at the site to provide updated views on associated risk, project management and other contingencies for the site in line with our EJP guidance.

Proposed outputs

3.328 We propose to hold NGGT to account for the delivery of the King's Lynn Subsidence project by setting a PCD for NGGT to undertake up front engineering and design work, and then by setting funding via a re-opener, following the GT Project Assessment Process outlined in the Compressor Emissions section of this document.

King's Lynn Subsidence PCD

3.329 NGGT proposed a PCD for King's Lynn Subsidence to develop the engineering design for the site and requested a £1.05m allowance for this work.

3.330 NGGT also requested baseline funding for the project, which would then be adjusted following a re-opener decision by September 2022.

Output parameter	Consultation position
Description and purpose of the deliverable	Ensure NGGT delivers finalised Option Selection and FEED studies
Expected timing of delivery	April 2022
Totex baseline allowances	£1.05m
Accountability mechanism	Close-out review
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

Rationale for consultation position

3.331 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances to consumers in the event the full scope of work is not delivered. However, in order to fully protect consumers, we must ensure that the output scope is clearly defined.

3.332 We do not agree with NGGT's proposal to set a baseline allowance to undertake the remedial works for King's Lynn, and propose instead to set funding following the re-opener assessment for the site.

3.333 As part of the Option Selection submission from NGGT, we expect to see:

- quantification of the rate of deterioration and the probability of failure to demonstrate the need for a major investment and not ongoing monitoring
- a more thorough optioneering process to address the risks posed by the current King's Lynn bi-directional pipework, including reference to the probability of failure
- a revised CBA that also considers all key drivers of investment including safety and environmental risks
- an updated breakdown of the capital costs and associated risk, project management, and other such contingencies in line with the RIIO-GT2 EJP guidance.

Stopples

3.334 Stopples are used as a means of controlling flows in a pipeline where a valve is not available, and allow NGGT to avoid network outages on sections of pipework when used.

3.335 NGGT has requested £10.00m of baseline allowance for stopples and provided historical costs to justify this request.

3.336 We agreed with the need to do this work to minimise network outages. Based on the historical costs presented we consider the proposed costs to be efficient and propose to approve the full £10.00m allowance for RIIO-GT2.

GRAID

3.337 Gas Robotic Agile Inspection Device (GRAID) was successfully completed and funded through the Gas Network Innovation Competition, which provides network companies the opportunity to compete for funding to develop and demonstrate new technologies.

3.338 GRAID provides a way of internally inspecting sections of network during live gas conditions to help prevent unnecessary excavations and early asset replacement. NGGT has proposed a GRAID rollout strategy during RIIO-GT2.

3.339 NGGT has requested £18.30m of baseline funding and justifies the need case based on cost savings of avoided excavations and future large projects.

3.340 We propose allow £10.02m for GRAID, reducing NGGT's costs where we:

- found a minor error in the delivery costs of the proposed large projects
- consider that risk costs should already be captured within the inspection phase of a GRAID project.

3.341 We also considered that the proposed costs should be offset against NGGT's forecast benefits due to avoided work. We propose to deduct the benefits of avoided excavations as these are included in the asset health allowance. We do not consider it appropriate to deduct the cost of a future major project as this has not been included as part of our proposed baseline allowance for RIIO-GT2.

Decommissioning (redundant assets)

Background

3.342 As the requirements of the National Transmission System change due to changing energy supply and demand patterns across Britain, there are assets on the network that are no longer required by NGGT in order to operate the system, defined as redundant assets.[89]

3.343 NGGT proposed costs of £81.07m in order to decommission a number of assets, sites and groups of assets that are now considered redundant, and an additional £1.49m to disconnect redundant customer sites.

3.344 NGGT also requested £16.5m to decommission compressor units[90] that are not compliant with emissions legislation across a number of sites throughout the RIIO-GT2 period. Although these costs have been submitted separately as part of the compressor emissions works, given the nature of the work we feel it appropriate to treat these costs in a single cost category totalling £99.03m.

[89]A redundant asset is defined by NGGT as "Any equipment or fixed assets which are no longer required (now or in the immediate future) for National Grid Gas Transmission to operate the National Transmission System (NTS)".
[90] NGGT requested £19.96m for compressor decommissioning due to emissions legislation, however £3.5m of this is for expenditure that will be incurred in RIIO-GT3.

Consultation position

Cost category	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Redundant assets	81.07	71.29
Customer sites	1.49	1.37
Compressor decommissioning	16.46[91]	9.14[92]
Total	**99.02**	**81.80**

Rationale for consultation position

Redundant assets and customer sites

3.345 We assessed the options presented in NGGT's CBA and accept the need to address these assets in order to reduce Opex costs and the assets' environmental impact. We also agree that decommissioning represents the most appropriate solution. We propose these costs as a PCD to ensure NGGT are held accountable for the delivery of the projects identified in NGGT's Business Plan.

3.346 Where possible we used historical actual costs from completed decommissioning works in RIIO-GT1 to verify NGGT's unit cost assumptions.

3.347 Where no historical cost information was available, we did a qualitative cost and volume assessment of NGGT's cost assumptions.

3.348 We found there to be a lack of comparable decommissioning projects completed during RIIO-GT1, limited number of projects with tendered quotations and lack of clarity around how NGGT's in-house estimating team and SMEs reached its view on costs. However, the large volume of projects and their relative individual immateriality mean we propose to accept NGGT's unit cost assumptions for non-compressor decommissioning.

Compressor decommissioning

3.349 For the sites involving the decommissioning of compressors, we reviewed the cost study NGGT used as the basis for its funding request. The report stated significant efficiencies for decommissioning multiple compressor units and we have applied

[91] NGGT has also requested an additional £3.5m in compressor decommissioning costs for RIIO-GT3 for a project that starts in RIIO-2.
[92] Following our cost assessment we propose to allow an additional £1.94m for RIIO-GT3 compressor decommissioning costs for a project that starts in RIIO-2.

these adjustments. This has resulted in a reduction of 36.3% to NGGT's requested allowance for compressor decommissioning.

3.350 Additionally, in line with our proposed policy on providing allowances for risk,[93] we intend to allow 10% risk costs for the compressor decommissioning work as NGGT has demonstrated a reasonable risk of finding asbestos on these projects. However, we are removing 8.1% of the total project costs for the remainder of decommissioning projects which NGGT had requested for risk, as these costs have not been sufficiently quantified or justified.

Proposed outputs - decommissioning PCD

3.351 NGGT proposed attaching a PCD to this investment, and we accept the justification for this in order to return any unspent allowances in the event the full scope of work is not delivered during RIIO-GT2.

Output parameter	Consultation position
Description and purpose of the deliverable	PCD to ensure NGGT fully delivers the decommissioning of the assets, customer sites and compressors identified in its Business Plan as redundant
Expected timing of delivery	End of RIIO-GT2
Totex baseline allowances	£81.80m
Accountability mechanism	Annual regulatory reporting
Proposed approach to allowance clawback	Ex post review at close-out

Cost Confidence

3.352 We reviewed cost confidence for each project in turn and consider:

- the costs for Stopples to be high-confidence as NGGT has submitted outturn costs as justification
- the costs for Bacton and Kings Lynn subsidence to be lower-confidence because we have based our view on NGGT's forecast costs. We have included the baseline allowance element for these projects (£8.02m) in the calculation of the confidence dependant incentive rate as lower-confidence
- GRAID costs to be lower-confidence because our view is based on NGGT forecasts, which have been informed by a limited sample
- decommissioning costs to be lower-confidence due to the limited cost data provided for redundant assets. For compressor decommissioning we consider

[93] See Assessment of risk and contingency section later in this Chapter.

the costs to be lower-confidence as NGGT did not consider the proposed efficiencies which were stated in the cost study used to justify the costs.

BPI Stages 3 and 4

3.353 We have assessed Stopples costs as high-confidence, however, as NGGT has failed the BPI Stage 1 minimum requirements it is not eligible for a BPI Stage 4 reward.

3.354 We consider it appropriate to exclude the costs for Bacton and Kings Lynn subsidence from any Stage 3 penalty as we have proposed to provide a proportion of baseline funding and an associated uncertainty mechanism.

3.355 Our view is that NGGT did not consider the benefits of GRAID as part of the proposed costs. Therefore, we consider the costs to be poorly justified and the £8.28m cost reduction subject to Stage 3 penalty.

3.356 We consider decommissioning costs to be poorly justified as the cost data is not reflective of all the proposed projects. We consider compressor decommissioning costs poorly justified because NGGT did not consider the proposed efficiencies which were stated in the cost study used to justify the costs. Therefore, we propose the £17.23m cost reduction subject to stage 3 penalty.

Consultation questions

NGGTQ27. Do you agree with our proposed approach to approve the need for investment, provide development funding and assess the full project costs through a UM during RIIO-GT2, for the Bacton, St Fergus subsidence and King's Lynn subsidence projects?

NGGTQ28. Do you agree with our proposed baseline allowances for Stopples, GRAID and decommissioning of redundant assets and compressors?

Non-operational Capex

3.357 Non-operational Capex costs comprise the following four activities: Property; Small tools, equipment, plant and machinery (STEPM); Vehicles and transport; and Information Technology & Telecoms (IT&T). Table 28 sets out our proposals for non-operational Capex cost categories. NGGT has proposed costs for both the TO and SO under these activities.

Table 28: Proposed allowances for non-operational Capex

Cost	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)	Ofgem Proposed UM
TO non-op Capex	135.07	47.50	Yes
TO capitalised Opex adjustment	-	(5.50)	-
SO non-op Capex	161.43	26.97	Yes
SO capitalised Opex adjustment	-	(0.57)	-
Total	**296.50**	**68.40**	

IT and Telecoms

Background

3.358 NGGT has requested £90.2m baseline funding for its proposed TO IT Capex projects, and £161.43m for its SO IT Capex projects in order to consolidate and modernise its IT systems and capabilities to ensure it is able to maintain and operate a safe and reliable system.

Approach to assessment

3.359 The IT&T costs were assessed as part of a separate expert review.[94] The results from which are included in the proposed allowances set for non-operational Capex. See Chapter 3 of the GT Annex for details of our assessment, and the Technical Annex for the full consultant's report.

Consultation position

Cost	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)	Ofgem Proposed UM
TO IT&T Capex	90.20	7.91	Yes
SO IT&T Capex	161.43	26.97	Yes
Total	**251.63**	**34.88**	

Rationale for consultation position

3.360 We recognise the challenge for NGGT in providing detailed IT project delivery plans and cost breakdowns given the stage of development of some of the

[94] Assessment carried out by Atkins consultants.

projects lifecycle. At the same time, it is not appropriate for GB consumers to fund IT investments with high degrees of cost uncertainty.

3.361 Generally, NGGT has provided good justification for the project investment needs case, however in many cases there was insufficient detail around the project timescales and scope, and the resourcing requirements and risks were poorly defined.

3.362 Despite NGGT providing additional information through the SQ process and bilateral meetings, we still consider the information received was not sufficient to justify many of the IT projects proposed in NGGT's Business Plan.

3.363 However, we recognise that investment in IT is a central pillar for the energy sector to transition into a digitalised industry and that investment is required in RIIO-GT2 to meet the expanding objectives and roles outlined by NGGT in its digitalisation strategy.[95]

3.364 Therefore, to balance the risk faced by consumers and NGGT we propose to provide ex ante allowances for projects that are sufficiently mature and to put in place an UM for those projects that are not sufficiently developed. For details of the proposed UM see Chapter 7 in the Core Document.

3.365 We would expect projects where baseline funding has not been provided that are brought forward for funding under the UM to be further progressed through NGGT's investment decision governance process. This will enable us to review detailed delivery plans and associated costs at a more granular level at the re-opener window(s) than that which was submitted through the Business Plans.

3.366 Table 29 below sets out the number of projects that NGGT requested and the number for which we are proposing an ex ante allowance.

Table 29: Number of proposed IT&T projects

Company	NGGT Proposed Projects	Ofgem Proposed Projects for ex ante	Ofgem Proposed Projects for UM
NGGT TO	35	2	33
NGGT SO	31	4	27

[95] NGGT RIIO-2 Business Plan – Page 175.

Small tools, equipment, plant and machinery

Background

3.367 NGGT (TO) maintains strategic spares and non-strategic spares in order to improve reliability on the NTS. Both groups of spares include electrical and non-electrical equipment, static and mobile plant generators, and tools and equipment.

Approach to assessment

3.368 We based our assessment on a review of a detailed cost breakdown for strategic spares provided by NGGT and historical costs for non-strategic spares.

Consultation position

STEPM Categories	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Strategic spares	14.43	12.81
Non-strategic spares	9.51	9.51
Total	**23.94**[96]	**22.32**

Rationale for consultation position

3.369 For strategic spares we accepted the evidence provided by NGGT, however, propose to make a downward adjustment of £1.62m for minor reporting errors found in the detailed site breakdown of costs.

3.370 For non-strategic spares, we accept historical costs to be reflective of future costs and propose to allow costs in full.

Non-operational property

Background

3.371 NGGT (TO) has proposed expenditure for site buildings refurbishment and an electric vehicle-charging infrastructure at remote sites.

[96] NGGT submitted costs of 24.00m in the December Business Plan, however, detailed cost breakdowns provided by NGGT through the SQ process stated requested costs at £23.94m.

Approach to assessment

3.372 We based our assessment on a review of a cost breakdown of site refurbishments and the investment costs associated with delivering the electric vehicle-charging infrastructure.

Consultation position

Property Categories	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Building refurbishment	10.62	9.74
Electric vehicle-charging infrastructure	1.48	1.48
Total	**12.10**	**11.22**

Rationale for consultation position

3.373 For building refurbishment, we propose to exclude costs of £0.88m for four building refurbishments where work has been undertaken within the past decade, making two exceptions where essential work was required.

3.374 We accept NGGT's proposed charging infrastructure investment in order to facilitate its transition towards a low carbon fleet, and propose to allow these costs in full.

Vehicle fleet

Background

3.375 NGGT (TO) is transitioning the GT operational vehicle fleet from 100% Internal Combustion Engine (ICE) vehicles to a mix of 70% ICE vehicles and 30% Electric Vehicles (EV) by the end of RIIO-GT2. NGGT costs are associated with vehicle purchases as NGGT does not lease vehicles.

3.376 Most network companies made proposals through their Environmental Action Plans to convert some or all of their fleets to EVs during RIIO-GT2 to reduce their business carbon footprints.

3.377 NGGT requested £6.52m for its ICE fleet costs, and £2.25m to transition 30% of its fleet to EVs, representing an incremental cost to consumers relative to a 100% ICE fleet of £1.0m.

Approach to assessment

3.378 EV costs are common across all sectors but differing approaches[97] proposed by network companies in their Business Plans meant that we were unable compare total costs on a like-for-like basis. However, we have considered the efficient unit costs across all companies.

3.379 We carried out a qualitative assessment of NGGT's EV proposals to assess the justification for the proposed fleet replacement, making sure the proposals had stakeholder support and that NGGT had fully considered costs, the environmental impact of the proposal and any alternative options. We then did a comparative assessment of EV proposals from all the network companies, with the aim of identifying an efficient unit cost for EVs that we could use to assess NGGT's cost and volume assumptions.

3.380 Due to the materiality and scope of the proposal, we do not feel it necessary to attach these costs to a PCD and will provide baseline funding. The EV proposals represent 26% of NGGT's total fleet Capex costs.

3.381 For the ICE fleet we used a historical trend model using RIIO-GT1 actual costs to set the RIIO-GT2 allowance.

Consultation position

Vehicle Categories	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Internal combustion engine (ICE)	6.52	3.87
Electric (EV)	2.25	2.17
Total	**8.77**	**6.04**

Policy justification

3.382 We welcome NGGT's proposal and note the ambition to reduce carbon emissions caused by operational travel. We consider that energy networks should be playing a key role in the decarbonisation of transport and are keen to facilitate them leading by example and converting their own fleets to EVs.

[97]Networks can choose to purchase or lease their fleets.

3.383 Although there is an incremental cost to consumers for replacing diesel vehicles with EVs, we consider that this cost is justified in order to help decarbonise the transport sector and help the energy industry reduce its environmental impact.

3.384 We think this approach will also encourage NGGT to be proactive with industry in addressing network-related issues that might otherwise hinder the wider rollout of EVs.

Cost assessment

3.385 We recognise that EV costs are currently higher than non-EV costs and acknowledge there will be an incremental cost increase associated with this transition. However, we have some concerns about NGGT's assumptions underpinning this cost increase.

3.386 There is uncertainty around future EV costs, with some industry experts predicting EV price parity by 2024,[98] and we do not agree with NGGT that the tendered costs for providing EVs, based on 2019 prices, are likely reflective of future costs.

3.387 We note that some network companies have not requested specific additional funding for converting their fleet to EVs despite committing to ambitious targets for EV replacement. Instead, they plan to do so from within their wider fleet Opex or Capex allowances. While we acknowledge that the volume of vehicles being replaced is considerably smaller in these cases, this contrasting approach to that proposed by NGGT underlines our concerns that the EV unit cost assumptions adopted by NGGT may be too high.

3.388 We also note that NGGT's EV transition programme schedules a large volume of vehicle replacement towards the end of the price control, when industry experts predict prices will be considerably lower.

3.389 Despite this uncertainty around costs, given the positive contribution to low carbon, the materiality of the proposal and the common re-opener criteria detailed in Chapter 7 of the Core Document, we do not feel it appropriate or proportionate to use a UM for these costs.

[98] Deloitte future EV price prediction.

3.390 We propose to set a unit cost of £27,125 for EVs (including fitting out costs) as this was the lowest made to us by any of the networks for the type of vehicle that NGGT has proposed to replace.

3.391 We accept NGGT's proposed volume of EV replacement and propose setting an allowance of £2.17m for the EV proportion of NGGT's total fleet Capex costs. Any over or underspend against the EV and charging infrastructure allowance will be treated through the TIM.

Cost confidence

3.392 We reviewed cost confidence for each aspect of non-operational Capex in turn and consider:

- IT&T costs to be high-confidence as they have been derived independently using subject matter experts (SME), independent of company forecasts
- STEPM and non-operational property costs to be lower-confidence as we have based our view of costs on NGGT's forecast costs
- as the majority of vehicle fleet costs relate to ICE vehicles for which we have historical RIIO-GT1 data that these are also high-confidence.

BPI Stages 3 and 4

3.393 We do not consider any of the high-confidence costs for IT&T or vehicle fleet costs to be eligible for a reward as NGGT's forecast costs did not reduce our view of costs and we have reduced costs relative to NGGT's submission.

3.394 Due to the lack of any further justification for STEPM and non-operational property, we consider these costs to be poorly justified and therefore we propose that the £3.64m of costs removed to be subject to stage 3 penalty.

Consultation questions

Q29. Do you agree with our proposed assessment approach and baseline allowances for non-operational Capex costs, including IT&T, STEPM, property and vehicle fleet investment?

Other costs

3.395 NGGT proposed other costs comprised of cyber resilience (cyber OT), business IT security and physical security costs. The cyber OT and IT costs are proposed for both the TO and SO. While physical security costs are only proposed for the TO.

Cyber resilience and Business IT security (Cyber OT and Cyber IT)

3.396 Cyber OT and IT[99] are confidential and not discussed in this document in the interests of national security.

Physical Security Capex

Background

3.397 NGGT owns assets and sites that are designated as Critical National Infrastructure (CNI). The Secretary of State has initiated the Physical Security Upgrade Programme (PSUP), a BEIS-led national programme to enhance physical security at CNI sites.

3.398 The level of security at each site and the type of solution required is determined externally and must adhere to BEIS PSUP Guidance Document and Centre for the Protection of National Infrastructure (CPNI) High Level Security principles (both confidential).

3.399 NGGT (TO) proposed installing new PSUP solutions at eight shared sites and three NGGT-owned sites during RIIO-GT2, as per PSUP requirements. The forecast cost is £48.54m.

3.400 Due to PSUP assets reaching the end of their asset lives during RIIO-GT2, NGGT has proposed a programme of rolling asset replacement with a forecast cost of £23.54m.

3.401 NGGT also proposed a major asset health upgrade at two sites at a cost of £25.69m.

[99] Please note that we no longer refer to 'Cyber Resilience' and 'Business IT Security', as we did in our SSMD Core Document. We have decided to change our reference to provide clarity for non expert readers. We now refer to these two terms as 'Cyber Resilience Operational Technology (OT)" and "Cyber Resilience Information Technology (IT)".

Approach to assessment

3.402 Following an update to the CNI list subsequent to the publication of NGGT's Business Plan, the security requirement at two sites has been downgraded and these no longer require a PSUP solution.

3.403 We assessed the needs case for a PSUP solution at each new site– the sites designated as CNIs and the type of solution required at each site is externally determined by BEIS, so no further Ofgem assessment was required.

3.404 We based our cost assessment on average actual incurred historical costs of delivering PSUP projects during RIIO-GT1, a bottom-up assessment of the main cost drivers and an assessment of NGGT's unit cost and volume assumptions.

3.405 We did a qualitative assessment of NGGT's proposals for major asset health upgrades at two sites to determine the scope of work required at those sites.

Consultation position

Physical Security Capex	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
New sites	48.54	26.46
Asset refresh	23.54	5.02
Major asset health upgrades	25.69	3.36
Capitalised Opex adjustment	-	(1.13)
Total	**97.77**	**33.70**

Rationale for consultation position

New sites

3.406 NGGT's Mains Work Contractor cost assumptions are based on our 2018 re-opener[100] decision and we accept these costs as efficient.

3.407 Based on the information submitted and an assessment of these costs from other projects, we do not accept NGGT's assumption for General Items and Preliminaries (GIPs) (10%), Project Management (22.5%) and Risk (14%). We maintain our position at the 2018 re-opener and set GIPs, Project Management and Risk costs at 8%, 15% and 10% respectively.

[100] Ofgem 2018 reopener decision.

Asset refresh

3.408 We accept NGGT's justification for a rolling asset replacement programme and agree with the proposed asset lives of seven years for IT assets and fifteen years for Technical assets. However, we do not agree with a forty-five year asset life as sufficient reason to replace Civils assets. Instead, we consider proactive maintenance and a fix-on-fail policy based on actual asset condition would be more appropriate.

3.409 We questioned the methodology NGGT initially used to forecast asset refresh costs, which used the site perimeter length as a volume driver. NGGT resubmitted its view of costs, using a new methodology, resulting in a 67% reduction of £15.5m to the £23.54m funding request.

3.410 We accept the new methodology used, which is based on unit costs and actual volumes, and accept all NGGT's unit cost and volume assumptions for both the IT and Technical asset refresh.

3.411 We do not accept the justification for NGGT's GIPs, Project Management and Risk assumptions and have revised these in accordance with our approach to new sites above.

Major asset health upgrades

3.412 We do not consider the proposal to replace the gatehouse at one of the two major asset health upgrade sites to be sufficiently justified. NGGT has not justified that the current configuration presents a significant additional security risk to warrant the proposed investment.

3.413 We do not accept the justification for replacing the fencing and cills at both sites. NGGT has not provided any actual condition data on the fences and the modelled condition assumptions are not sufficient to justify the investment. Our view is that NGGT will be able to manage the fences and cills with its maintenance (Opex) allowance. Therefore, we are proposing to reject these replacement costs in full.

3.414 NGGT has justified the replacement of gates at both sites as it presented evidence of failures and the associated impact. We propose to allow these costs in full.

3.415 We do not accept the justification for using the perimeter length as a volume driver for replacement of Technical assets at these sites. It has not been demonstrated that the work required at these sites differs substantially from that

required at other sites where an asset refresh has been approved, for which a unit cost and volume approach was used to set allowances. Therefore, we have applied the same average reduction to costs at these sites as NGGT made to other asset refresh sites in its resubmission. We have also made adjustments for GIPs, Project Management and Risk in line with our approach to new sites.

Cost confidence

3.416 As new site costs are based on the historical costs for installing PSUP solutions across all sectors we consider these to be high-confidence. However, the asset refresh costs are based on NGGT's forecast and therefore we consider them to be lower-confidence.

BPI Stages 3 and 4

3.417 As NGGT did not provide any further evidence to substantiate the asset refresh costs we consider them to be poorly justified and the £40.86m cost reduction subject to stage 3 penalty.

Physical security PCD

Output parameter	Consultation position
Description and purpose of the deliverable	PSUP upgrades at a specified number of sites[101]
Expected timing of delivery	End of RIIO-GT2
Totex baseline allowances	£26.46m
Accountability mechanism	RRP
Proposed approach to allowance clawback	Ex post assessment of delivery at close-out

3.418 In its Business Plan NGGT proposed a PCD for the full scope of its physical security Capex work. We do not consider a PCD necessary for the asset refresh or major asset health upgrades to sites given the small amount of funding we propose to allow. Therefore, we propose the PCD is only for the PSUP upgrades at new sites.

3.419 The proposed scope of the PCD is any sites NGGT is funded to upgrade but no longer require a PSUP solution, due to being removed from BEIS' CNI list. NGGT will return the unspent allowance in full.

[101] Site and volume details are confidential due to these sites being designated CNI.

Physical security Opex

Background

3.420 PSUP Opex is required for maintenance and fault repair of PSUP assets, 24/7 monitoring of PSUP sites through an Alarm Receiving Centre (ARC), and management of communication infrastructure between the ARC and PSUP sites.

3.421 NGGT (TO) requested £34.10m across RIIO-GT2 for its PSUP Opex costs.

Consultation position

Cost	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Total	34.10	33.70

Rationale for consultation position

3.422 We undertook a qualitative assessment of NGGT's proposal in order to identify the key cost drivers and assess NGGT's cost assumptions.

3.423 We used the historical actual RIIO-GT1 PSUP Opex costs and volumes in order to determine a unit cost per site. NGGT has demonstrated efficiency savings relative to RIIO-GT1 and its proposed unit cost rate is lower than recent actual incurred costs and our modelled view of unit costs by £1.68m.

3.424 We removed costs for the two PSUP sites included in the Business Plan submission that BEIS subsequently removed from its CNI list and therefore no longer needed upgrading.

3.425 We do not propose to have any outputs attached to our proposed baseline funding.

Cost confidence

3.426 Due to the high volume of PSUP sites and the large volume of actual cost data, we propose to classify these costs as high-confidence.

BPI Stages 3 and 4

3.427 We have assessed these costs as high-confidence, however, as NGGT's forecast did not reduce our view of costs and we have reduced costs relative to NGGT's submission there are no costs eligible for the BPI Stage 4 reward.

Consultation questions

NGGTQ30. Do you agree with our proposed allowances for Physical Security Capex and Opex?

Network operating costs (Direct opex)

Background

3.428 TO Direct opex costs are those incurred on an ongoing basis relating to NGGT's field-based workforce delivering its asset steward responsibilities. SO Direct Opex costs are ongoing costs incurred operating the network on a day-to-day basis.

3.429 NGGT requested a baseline allowance of £199.87m for its TO Direct Opex activities throughout RIIO-GT2, and £155.54 for its SO Direct Opex costs (including £40.7m Xoserve Opex costs).

Approach to assessment

3.430 One of the main drivers for Direct Opex is the size of the network, which is forecast to decline marginally during RIIO-GT2.[102] Therefore, the costs tend to be relatively consistent over time and we consider historical costs to be a strong indicator of likely future costs. We assessed NGGT's funding request using aggregated and disaggregated historical trend models based on NGGT's RIIO-GT1 submitted actual costs to set the RIIO-GT2 allowance.

3.431 We did a qualitative assessment of NGGT's Business Plan to identify the key Direct Opex cost drivers in RIIO-GT2 and understand any significant deviations from the historical trend in NGGT's forecast costs. For the TO, costs largely relate to responding to network faults, inspection and maintenance activities and

[102] Compressors and other assets are being decommissioned, no significant load being added to the network.

operational property costs, while for the SO the key cost drivers are the real-time network operations, market facilitation and operational support.

3.432 We conducted a disaggregated bottom-up assessment of RIIO-GT1 actual costs for all Direct Opex sub-categories in order to cleanse and normalise the data where required before running the historical trend models.

Consultation position

Category	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
TO Direct Opex	199.87	190.41
SO Direct Opex	155.54	155.54

Rationale for consultation decision

3.433 NGGT has demonstrated in its Business Plan where these costs will be incurred and has provided a satisfactory explanation for any deviations to historical trends, such as workforce renewal.

3.434 Our TO historical trend model forecast costs for Faults and Operational Property higher than those submitted by NGGT, and we accept these costs in full. Our modelled forecast for Inspections and Maintenance costs was £9.46m lower than NGGT's forecast, and this will be removed from the baseline.

3.435 Our SO historical trend model forecast total costs higher than NGGT have submitted. We welcome NGGT's ambition to reduce its SO operational expenditure during RIIO-GT2, and accept these costs in full.

Cost confidence

3.436 Due to the high volume of historical actual cost data and the consistency of Direct Opex costs over time in all sub-categories, these are treated as high-confidence costs.

BPI Stages 3 and 4

3.437 We have assessed these costs as high-confidence, however, as NGGT has failed the BPI Stage 1 minimum requirements assessment there are no costs eligible for the BPI Stage 4 reward.

Proposed outputs

3.438 We are not proposing to attach a PCD or UM to the Direct Opex costs for the TO or SO.

Indirect costs

Business support and Closely Associated Indirects

Background

3.439 Indirect Opex consists of both Business Support Costs (BSC) and Closely Associated Indirects (CAI) costs. BSCs are incurred supporting network companies' general business activities and CAIs are those that support operational activities.

3.440 For its TO activities, NGGT has requested £163.36m for BSCs and £156.49m for CAIs, and for its SO activities it has requested £113.96m for BSCs and £48.93m for CAIs.

Approach to assessment

3.441 The GT Annex sets out the modelling approach we adopted in deriving our proposed allowances. Our Transmission BSC model of choice is a CSV regression that included a GT sector dummy variable.[103] For CAI, we are using a model that incorporates Modern Equivalent Asset Value (MEAV) and total Capex. The outcomes of the modelling for each are set out in the tables below. Note that the IT&T elements were obtained through our SME review rather than through the econometric modelling.

Consultation position

Network	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
NGGT TO BSC	163.36	157.81
NGGT SO BSC	113.96	110.08
NGGT TO CAI	156.49	69.70
NGGT SO CAI	48.93	47.91

[103] We included a GT sector dummy variable to control for inherent differences between the ET and GT sectors, which materially improved the model's statistical fit and helped address general concerns about the true comparability of ET and GT.

Rationale for consultation position

Business support costs

3.442 Our modelled NGGT (TO) BSC allowance was slightly lower than NGGT's requested amount, and we propose to reduce NGGT's baseline request by £5.55m.

3.443 We did not use NGGT (SO) data in our BSC model. Due to the different nature of SO to TO operations we did not consider it appropriate to compare the electricity transmission network companies with a combined gas transmission TO and SO, as we considered that this had potential to adversely impact the modelled results.

3.444 However, our modelled output is a measure of each Transmission network company's organisational efficiency, and as such we consider it reasonable to apply the same modelled adjustments to NGGT (SO) as we have to NGGT (TO).[104] This results in a reduction of £3.88m to the requested baseline amount.

Closely Associated Indirects

3.445 In line with the recommendations of our consultancy report, we undertook further refinement of our dataset and made pre- and post-modelling adjustments where the evidence suggested these were appropriate in order to provide uniformity and cost comparability across the Transmission sectors.

3.446 For NGGT we only made one pre-modelling adjustment. Before running the regression model we removed £11.40m of NGGT's historical actual cost data for engineering, management and clerical costs (2019) for a one-off pension adjustment.

3.447 Unlike the other TOs, we required NGGT to submit its Business Plan costs post-capitalisation (ie on a net basis). Consequently, the capitalised elements of CAI are included within the cost of projects in the Capex plan.

3.448 We also required NGGT to submit pre-capitalised (gross basis) indirect Opex costs for our cost assessment to ensure fair and accurate comparisons with the other transmission companies.

3.449 In applying the resulting adjustment from the model output (assessed on a gross basis), we adjusted both the indirect costs and the cost of Capex projects

[104] We have applied the same adjustment to the requested NGGT (SO) BSC allowance (this excludes IT&T).

(allowances set on a net basis) in proportion to the capitalisation rate used by NGGT.

3.450 The Capex costs presented are exclusive of any capitalised Opex adjustment for clarity. These adjustments will be reflected in our final determinations, however, for completeness they have been included in the PCFM modelled costs and this adjustment is presented as a capitalised Opex adjustment in the relevant allowance tables for clarity. The total adjustment to the Capex plan is £76.60m (11.4% of Capex) for the TO and £0.6m (2.1% of Capex) for the SO.

3.451 After making the modelling adjustments described above, we ran our model and determined that NGGT had an efficiency score of 1.04.[105]

3.452 We recognise that in many instances we have removed baseline funding from NGGT's requested allowance and will instead treat these costs through an uncertainty mechanism. These costs could potentially result in significant upward adjustments to NGGT's Capex allowance during RIIO-GT2, which will in turn lead to NGGT incurring more CAI costs.

3.453 To mitigate this we are proposing to introduce an Opex Escalator UM to adjust Opex costs following changes to network companies' Capex investment plans – see Chapter 4 for details. The allowances in the Table 30 and Table 31 below reflect our modelled output, the SME recommendation for IT&T and the proposed reductions to NGGT's Capex forecasts for the RIIO-GT2 period.

Table 30: Proposed CAI Allowances for TO

NGGT (TO)	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Operational IT & Telecoms	15.77	7.02
Project management	2.81	1.25
Network design and engineering	10.67	4.75
Engineering management and clerical support	44.31	19.73
Network policy (including R&D)	46.81	20.85
Health, safety, and environment (HSE)	12.30	5.48
Operational training	17.28	7.70
Vehicles and transport	6.53	2.91
Total	**156.49**	**69.70**

[105] Efficiency score calculated as actual / submitted costs divided by modelled costs. Scores below 1 indicate efficiency, with scores above this suggesting inefficiency.

Table 31: Proposed CAI Allowances for SO

NGGT (SO)	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Total	48.93	47.91

3.454 For NGGT (SO) CAI costs, the only cost category where NGGT has requested baseline funding is IT&T which was assessed separately by our expert IT consultants - see the Technical Annex for the consultant's report.[106] Therefore, for the SO CAI allowance, we applied only the adjustment resulting from this assessment of IT&T costs and not our CAI modelled adjustment.

Cost confidence

3.455 As our view of allowances for both BS and CAI costs has been derived using econometric techniques, independent of company forecasts, we consider these costs to be high-confidence.

BPI Stages 3 and 4

3.456 We have assessed these costs as high-confidence, however, as NGGT's forecast did not reduce our view of costs and we have reduced costs relative to NGGT's submission there are no costs eligible for the BPI Stage 4 reward.

Quarry and Loss

3.457 Quarry and Loss of Development costs are costs incurred by NGGT (TO) in settling claims from landowners whose property contains NTS assets. NGGT is funded to efficiently challenge claims and compensate landowners where the presence of NGGT assets affects drainage or crop production, sterilises minerals or prevents development.

3.458 Our view of NGGT's submission is based on average actual incurred historical costs in RIIO-GT1 and detailed below.

Consultation position

Quarry and Loss Categories	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Loss of crop	3.03	2.76

[106] Assessment conducted by Atkins.

Quarry and Loss Categories	NGGT Proposed Baseline (£m)	Ofgem Proposed Baseline (£m)
Drainage	4.90	4.13
Loss of development	2.24	-
Mineralisation	6.60	-
Total	**16.78**	**6.89**

Rationale for consultation position

3.459 NGGT has not justified the proposed 5% per annum compound uplift to historical loss of crop volumes, and therefore we proposed to set the loss of crop allowance in line with our view of volumes and unit costs, which are based on RIIO-GT1 historical actual costs.

3.460 We do not accept NGGT's justification to use all costs incurred in RIIO-GT1 as part of its unit cost calculation, as Ofgem determined as part of the 2018 re-opener decision[107] that some of these costs were no efficiently incurred. We proposed to use the 2018 re-opener unit cost updated to include the 2019 cost data to set NGGT's drainage allowance.

3.461 We do not consider loss of development and mineralisation costs to be forecastable as past costs do not reflect future costs, and there is considerable uncertainty around the likely timing and materiality of any future claims. We reject these baseline costs and maintain our SSMD decision[108] to use a re-opener[109] to treat these costs.

Cost confidence

3.462 We consider these costs to be high-confidence due to the volume of historical information available, except those we have decided to make subject to a re-opener.

BPI Stages 3 and 4

3.463 We have assessed these costs as high-confidence, however, as NGGT's forecast did not reduce our view of costs and we have reduced costs relative to NGGT's submission there are no costs eligible for the BPI Stage 4 reward.

[107] Ofgem 2018 reopener decision.
[108] SSMD GT Annex - Chapter 6.
[109] See Chapter 4 of this document.

Proposed outputs

3.464 We are not proposing to set an associated PCD with these costs.

Pension costs

3.465 NGGT submitted £17.79m for its TO pensions costs and £0.93m for the SO. For our Draft Determinations we have used the costs as submitted in the companies' Business Plans. We will update these at our Final Determination with the outcome of the 2020 pension reasonableness review, which will conclude in November 2020.

Cost confidence

3.466 We have excluded pension costs from our review of confidence as these costs have not been assessed.

BPI Stages 3 and 4

3.467 As we have not attributed a view of confidence to pension costs they have not been included in stages 3 or 4 of the BPI.

Consultation questions

Q31. Do you agree with our assessment approach and baseline allowances for NGGT's Opex costs, including network operation costs, BSC, CAI and Quarry and Loss?

Q32. Do you agree with our proposed approach to Pensions costs?

Assessment of risk and contingency

3.468 Ofgem recognise delivery of capital projects brings an inherent risk of cost overruns during project delivery, arising from a variety of factors outside of NGGT's control. We will make appropriate funding adjustments to allowances where this can be justified.

3.469 We recognise the need for a risk allowance will vary depending on the size and scale of the project, its maturity in the project lifecycle, availability of historical information and the approach to contracting. However, we also note the potential to realise opportunities exist in parallel with these risks.

3.470 Ofgem therefore proposes the following principles in setting risk allowances in the GT sector:

- where cost evidence is based on historical outturn costs it is expected that risks have materialised and are therefore inherent in the cost data. We would not normally allow additional risk costs in this instance, but will consider this where evidence is provided that an uplift to allowance for risk is justified
- where contracted information or SME views are provided we will consider an uplift for risk, but only where this is quantified, ie a blanket percentage uplift will not be accepted
- for bespoke projects, we will consider risk as part of company allowances but expect the risks to have been fully quantified and costs estimated. Evidence of this may be in the form of the project risk register.

3.471 For each of the above, we would also expect NGGT to present evidence of potential opportunities and the mitigation and management of risk, to demonstrate that the risk of cost overruns is being appropriately managed.

3.472 Furthermore, to protect consumers from companies incorporating excessive risk costs within their forecasts in an attempt to skew the balance of probabilities in favour of outperformance, we will cap the percentage allowance for risk at 10% of project costs. The evidence expected for any risk allowance exceeding this threshold is expected to be substantial and we will assess these on a case-by-case basis.

Consultation questions

NGGTQ33. Do you agree with our proposed approach to assessing risk?

Ongoing efficiency

3.473 We have applied our operating efficiency adjustment in line with the process set out in Chapter 3 of the GT Annex and Chapter 5 of the Core Document. This has resulted in a downward adjustment of our proposed totex allowance of £41.91m for the TO and £8.59m for the SO, a total of £51.50m for NGGT.

4. Adjusting baseline allowances to uncertainty

Introduction

4.1 In this Chapter, we provide our views on the package of UMs for NGGT.

4.2 In our SSMD, we invited companies to propose bespoke UMs informed by the enhanced engagement process. We have considered the extent the supporting information justifies the key criteria outlined in the BPG:

- materiality and likelihood of the uncertainty
- how the risk is apportioned between consumers and the network company
- the operation of the mechanism
- how any drawbacks may be mitigated to deliver value for money and efficient delivery.

4.3 You can find the background and our assessment approach in Chapter 7 of the Core Document and Chapter 4 of the GT Sector document. For full details on the UMs proposed by NGGT, refer to NGGT's Business Plan.[110]

Uncertainty Mechanisms

4.4 Table 32 below summarises the UMs that will apply to NGGT in RIIO-GT2, and signposts where to find additional detail on accepted UM proposals.

[110] NGGT RIIO-GT2 Business Plan

Table 32: Proposed NGGT UMs

UM name	UM type	Further detail
Common UMs – across all sectors		
Ofgem Licence fee	Pass-through	Core Document - Chapter 7
Business rates	Pass-through	Core Document - Chapter 7
Bad debt	Pass-through	Regulatory Finance Annex – Chapter 11
Inflation indexation of RAV and allowed return	Indexation	Regulatory Finance Annex - Chapter 9
Cost of debt indexation	Indexation	Regulatory Finance Annex - Chapter 5
Cost of equity indexation	Indexation	Regulatory Finance Annex - Chapter 5
Real Price Effects	Indexation	Core Document – Chapter 5
Tax review	Re-opener	Regulatory Finance Annex – Chapter 7
Pensions (pension scheme established deficits)	Re-opener	SSMD Finance Annex - Chapter 7
Physical security	Re-opener	Core Document - Chapter 7
Cyber resilience IT	Re-opener	Core Document - Chapter 7
Cyber resilience OT	Re-opener	Core Document - Chapter 7
Coordinated Adjustment Mechanism	Re-opener	Core Document - Chapter 7
Net Zero	Re-Opener	
Non-operational IT & Telecoms	Re-opener	Core Document - Chapter 7
UMs for NGGT only		
Central Data Services Provider costs (was called The Gas Transporters share of Xoserve costs)	Pass-through	SSMD GT Annex - Chapter 6
Independent Systems	Pass-through	SSMD GT Annex - Chapter 6
Policing cost associated with Counter-Terrorism Act 2008	Pass-through	SSMD GT Annex - Chapter 6
Incremental capacity	Re-opener	This document - Chapter 4
Quarry and Loss	Re-opener	This document - Chapter 4
Pipeline diversions	Re-opener	This document - Chapter 4
Bacton terminal site redevelopment	Re-opener	This document - Chapter 4
King's Lynn subsidence	Re-opener	This document - Chapter 4
Asset health – non-lead assets	Re-opener	This document - Chapter 4
Compressors	Re-opener	This document - Chapter 4
GT Opex escalator	Indexation	This document - Chapter 4

Incremental capacity

Incremental capacity re-opener	
Purpose	To allow an adjustment to NGGT's allowed expenditure in the event of a request for the release of Firm Entry/ Exit Capacity which constitutes Incremental Obligated Entry/ Exit Capacity and which cannot be satisfied through the use of Entry/ Exit Capacity Substitution.
Benefits	This re-opener will allow a case-by-case assessment of project need and cost, and support delivery of key infrastructure at best value to the consumer.

Background

4.5 In our SSMD,[111] we set out that we would introduce a re-opener mechanism to manage potential costs associated with the release of incremental capacity.

4.6 The re-opener mechanism will be applicable where the Licensee applies to satisfy a request for Firm Entry Capacity or Firm Exit Capacity through Funded Incremental Obligated Entry Capacity or Funded Incremental Obligated Exit Capacity respectively (henceforth Funded Incremental Obligated Capacity).

4.7 This would replace the Generic Revenue Driver Methodology, and accompanying process, which exists in RIIO-GT1.

Consultation position

Funded Incremental Obligated Capacity Re-opener[112]	Consultation position
Materiality threshold	No materiality threshold for triggering the re-opener.
Re-opener window	No specific window for submissions.
Notice to release Incremental Obligated Capacity	Retain the current notice given by the Licencee of a request
Pre-application notification	To be submitted to Ofgem at least 12 months prior to the project submission
Project submission	Project submission process to include a needs case and cost assessment
Exceptional events mechanism	To include a mechanism for adjusting allowances for exceptional events

[111] RIIO-2 Sector Specific Methodology Decision - GT Annex - Paragraph 6.16.
[112] We will consider as part of Licence drafting whether there should be two separate re-openers, for Entry and Exit respectively, but our proposed policy is as set out here.

Rationale for consultation position

Application of re-opener

4.8 All applications by the Licencee for an adjustment to its allowed expenditure for Funded Incremental Obligated Capacity during RIIO-GT2 will be considered through this mechanism. We consider that this case-by-case assessment is appropriate given the expected limited number of applications (incremental capacity costs have not been incurred since 2007) and additionally due to variability of projects, such as site-specific factors. In addition, the costs for delivering Funded Incremental Obligated Capacity can be material.

4.9 We consider that this is best achieved as a bespoke re-opener, and does not follow the common design parameters for re-openers set out in Chapter 7 of the Core Document. Reasons for this are as explained in the below paragraphs.

4.10 We do not propose to introduce a materiality threshold for triggering this re-opener mechanism. This is to simplify the policy, such that any allowed funding occurs through this mechanism.

4.11 This re-opener would not have specific windows during which adjustments may be proposed. This re-opener is project driven. It is intended this re-opener does not adversely affect timings of other processes or introduce unnecessary delay.

Notice to release Incremental Obligated Capacity

4.12 We propose to retain the existing requirement for the Licencee to publish a notice following receipt of a request for firm entry/exit capacity. We consider there to still be a need for public visibility the reservation of capacity, and therefore for this requirement to remain.

Pre-application notification

4.13 In addition to the notice to release Incremental Obligated Capacity, we propose to introduce a requirement for a notification of pre-application. This would contain a brief description of the project, and proposed timings for the project assessment. It would need to be provided to Ofgem at least 12 months prior to the Project Submission.

4.14 This stage will provide early warning to Ofgem of an upcoming project, and ensure there is sufficient planned resource for subsequent stages. It would formalise

NGGT's engagement with Ofgem, providing an early opportunity to discuss the project and identify potential issues.

Project submission

4.15 We propose to include a project submission stage in the re-opener design. This stage will require the Licencee to provide the necessary information required in order for Ofgem to undertake thorough assessment of the project need and costs. This will take place following planning consent, to ensure that the assessment of the project can take place on the finalised details.

4.16 We welcome views on when the submission of needs case, and cost assessment are considered most appropriate by stakeholders, and if these should be submitted at separate points.

4.17 We consider the inclusion of assessments of the project need and costs, to be important, to establish the long-term project need, and ensure the accuracy and efficiency of costs. It is also important that any projects requiring funding through the mechanism are established as being in the interests of existing and future consumers.

4.18 Following completion of the project assessment, we will consult on its position, and include, if applicable, appropriate adjustment to allowed revenue.

4.19 Late competition models may be applied to the delivery of projects meeting the criteria for competition. Further detail is provided in Chapter 9 of the Core Document.

4.20 Large Project Delivery mechanisms may also be applied on a project-by-project basis. Further detail is provided in Chapter 4 of the Core Document.

4.21 We intend to publish guidance, which will accompany the re-opener Licence conditions. This will contain more information on the steps and information required for the re-opener mechanism. This will be consulted on and published ahead of RIIO-GT2.

Exceptional events mechanism

4.22 We propose to include an exceptional events mechanism within this re- opener should project costs materially change due to certain events outside the Licencee's

control. This would allow for the adjustment to allowed revenue to be altered in specific circumstances.

Consultation questions

Q34. Do you agree with our proposed UM for incremental capacity, specifically the timing and content of the Pre-Application Notification stage, the Needs Case and Cost Assessment timings, and the need for an exceptional events mechanism?

Pipeline diversions

Pipeline diversions re-opener	
Purpose	A mechanism that ensures NGGT are able to recover costs that are outside of their control.
Benefits	Consumer money is not spent on projects with uncertain costs and/or scope of work.

Background

4.23 In our SSMD,[113] we stated our intention to retain a re-opener provision for pipeline diversion costs and would review the cost items that NGGT may recover in relation to diverting existing pipelines.

Consultation position

4.24 The re-opener will be for pipeline diversion costs:

- arising as a result of existing obligations/liabilities taken on by the Gas Council/ British Gas for which NGGT is now responsible
- where NGGT has demonstrated it has done everything in its powers to recover costs from the relevant party requesting the pipeline diversion.

UM parameter	Consultation position
Materiality threshold	In line with our common design parameter for re-openers as set out in Chapter 7 of the Core Document
Re-opener window	Year 2 of RIIO-GT2

[113] SSMD GT Annex - Chapter 6 Table 5.

Rationale for consultation position

4.25 For the reasons set out in our SSMD, we have decided to retain the re-opener for pipeline diversion costs arising from obligations / liabilities NGGT have inherited from the British Gas Council. This is because the obligations they inherited may require National Grid Gas to divert a pipeline to enable land development, which may result in a substantial cost to consumers.

4.26 Given the level of uncertainty around the need to divert pipelines it would not be in consumers' best interests to provide ex ante funding for such work. This is because those costs arise on an ad hoc basis, as a result of third party requests. It may be the case that NGGT is not, in fact, required to divert any pipelines during the course of RIIO-GT2.

4.27 We have adopted the approach to common design parameters[114] for pipeline diversion costs, and we consider that a re-opener in Year 2 of RIIO-GT2 is appropriate as any projects that require funding during the price control are likely to have been identified at this point.

Consultation questions

NGGTQ35. Do you agree with our proposed UM, materiality threshold and trigger for pipeline diversion costs?

Quarry and loss

Quarry and loss re-opener	
Purpose	To adjust revenues should NGGT incur material costs related to loss of development or mineral sterilisation Quarry and Loss claims.
Benefits	Consumer money is not spent on projects with uncertain costs and/or scope of work.

Background

4.28 In our SSMD,[115] we stated that we were minded to retain a Quarry and Loss re-opener for costs related to loss of development or mineral sterilisation only and to provide baseline funding for all other Quarry and Loss costs.

[114] Core Document – Chapter 7.
[115] SSMD GT Annex - Para 6.35.

4.29 As part of its Business Plan, NGGT was required to provide information regarding the types of costs associated with loss of development and mineral sterilisation along with strategies to manage such claims.

Consultation position

UM parameter	Consultation position
Materiality threshold	In line with our common design parameter for re-openers as set out in Chapter 7 of the Core Document
Re-opener window	Year 2 of RIIO-GT2

Rationale for consultation position

4.30 NGGT provided additional information regarding the types of costs it incurs challenging loss of development and mineral sterilisation claims and we are satisfied with the actions NGGT takes. Although NGGT provided some additional details of forecast costs in these areas, there still remains considerable uncertainty around the amount and timing of these costs.

4.31 We propose to allow both, NGGT and Ofgem, to propose adjustments to the NGGT's levels of allowed expenditure for costs relating to settling particular types of claims from landowners in whose land network assets are located (Quarry and Loss Costs).

4.32 Only costs incurred in relation to the following types of claims will be subject to this UM, all other Quarry and Loss costs will be funded through baseline allowances:

- loss of land development (including in relation to housing and quarrying)
- sterilised minerals
- landfill and tipping
- power generation.

4.33 The cost claimed must also be reasonable. We will determine whether a claim and the costs associated with it are reasonable having regard to the basis of the claim and the amount of compensation sought from or paid by NGGT.

4.34 NGGT proposed that the re-opener mechanism has a single window in Year 2 of RIIO-GT2 during which adjustments to allowances may be proposed, and we accept this.

4.35 Where a proposal is made by NGGT, we will determine any appropriate revisions to allowances in accordance with the criteria set out in the Licence condition.

Consultation questions

Q36. Do you agree with our decision to retain a UM for Quarry and Loss costs relating to loss of development and mineral sterilisation only, and do you agree with our proposed UM parameters?

Asset health

Asset health re-opener	
Purpose	To adjust NGGT revenues due to uncertainty in the costs associated with above ground Plant & Equipment and Cab Infrastructure assets during RIIO-GT2.
Benefits	Consumer money is not spent on projects with uncertain costs and/or scope of work.

Background

4.36 To support its proposed unit costs for the overall asset health plan, comprising seven unique project themes, NGGT provided a series of cost justification papers as evidence to demonstrate the efficiency of its costs. We used this evidence as the basis of its cost assessment to reach a view of efficient costs and set allowances.

4.37 For two of these project themes, we were unable to reach a view of efficient costs based on the information provided. These being:

- plant and equipment - the pipework at compressor stations and above ground installations, coated as a means of primary protection and protected by cathodic protection as a secondary means where it is below ground. As well as the equipment associated with maintaining gas quality and pressure
- cab infrastructure - the enclosures, air circulation, exhaust and fire suppression systems necessary for the protection and safe functioning of the compressor fleet.

4.38 While recognising uncertainty around the cost, we accept the need to fund proactive work to prevent further deterioration of the asset population, which will ultimately lead to increased costs to consumers in the future. We therefore also

propose to partially fund this work on an ex ante basis and this is covered in the cost assessment chapter.

Consultation position

UM parameter	Consultation position
Materiality threshold	In line with our common design parameter for re-openers as set out in Chapter 7 of the Core Document
Re-opener window	Year 3 of RIIO-GT2
Re-opener requirements	NGGT should develop cost reporting through the annual regulatory reporting process to support the review of incurred costs and assessment of forecast costs for the remainder of RIIO-GT2. This data should be sufficiently granular and comprise units of measure that do not obscure the underlying costs of delivery
Limits of Applicability	The scope of this proposed Asset Health UM is limited to those assets classes within the Plant & Equipment and Cab Infrastructure project themes

Rationale for consultation position

Unit cost data

4.39 Through our assessment of costs, we were unable to come to a view of efficient costs, as we did not consider the basis upon which NGGT's proposed unit costs were derived was robust.

4.40 Plant and equipment:

- The evidence provided for painting costs was limited relative to the proposed volume in RIIO-GT2. We did not consider the methodology used to extrapolate these costs to the RIIO-GT2 plan and derive a point unit cost estimate was appropriate.
- The proposed unit cost for defect remediation was highly sensitive to the assumed conversion rate between defect categories and defects, and NGGT could not provide any justification for the value used.
- The unit cost for the remediation of cathodic protection defects was highly sensitive to the assumed volume of digging required and no quantitative evidence was provided to justify this.
- The replacement of cathodic protection insulated joints was based on bottom-up estimates, and NGGT had limited outturn data in support of these costs from RIIO-GT1.

4.41 Cab infrastructure:

- The historical evidence provided comprised bundled projects and it was difficult to disaggregate and allocate costs accurately.
- There was a lack of clear delineation between replacement and refurbishment scopes making the proposed unit costs meaningless.

4.42 Due to the above factors, we were unable to make any meaningful cost adjustments to propose an efficient unit cost in RIIO-GT2 in support of ex ante funding. Furthermore, due to the methodological and data issues, we were unable to accept these costs as submitted. It is for these reasons we propose the use of an UM.

Links to baseline funding

4.43 In recognising the need for both these projects and proposing to fund a proportion on an ex ante basis, we understand this raises the risk to consumers, as far as neither NGGT nor we know the true cost of delivering this work. We therefore intend to mitigate this risk by reviewing the incurred costs associated with these allowances ex post during the re-opener window. We believe this presents the most proportionate solution for both NGGT and consumers.

Data Provision

4.44 In considering the methodological issues surrounding the unit cost proposals and the data used to support them, Ofgem propose to make this UM conditional on NGGT developing suitable cost reporting techniques in RIIO-GT2. The purpose of this is twofold, to allow Ofgem to:

- assess the efficiency of costs incurred in RIIO-GT2 up to the re-opener window on an ex post basis
- set efficient allowances for the remainder of the price control and beyond.

4.45 Ofgem proposed this is developed in conjunction with the development of the annual regulatory reporting requirements for RIIO-GT2.

Consultation questions

Q37. Do you agree with our proposed asset health UM, specifically basing the UM on improved quality of cost data and volume measurement and assessing costs ex post?

Bacton terminal site redevelopment

Bacton redevelopment re-opener	
Purpose	To address uncertainty around the costs of addressing long-term asset health issues at the Bacton terminal.
Benefits	Consumer money is not spent on projects with uncertain costs and/or scope of work.

Background

4.46 The Bacton North Sea gas terminal was constructed in the late 1960s, and as such many of the assets at the site have reached a state of significant degradation. NGGT has proposed developing a replacement terminal on a brownfield site may prove to be cost beneficial over replacing existing assets like-for-like.

4.47 This project is still in an early development stage, as such there is significant uncertainty around the costs involved in redeveloping a gas terminal, as such NGGT have requested a re-opener for the costs for this project.

Consultation position

UM parameter	Consultation position
Materiality threshold	N/A
Re-opener window	Feb 2022 (Options Selection), Aug 2022 (Cost assessment)
Re-opener requirements	Outlined in associated PCD

Rationale for consultation position

4.48 NGGT proposed attaching a re-opener to this investment. As this project is at an early stage of development, the final preferred option has not been selected and as such there is significant uncertainty around the final outturn cost, As such, we agree with NGGT's proposal to apply a UM.

4.49 In order to allow for further development of the optioneering at Bacton, we are providing a baseline allowance for project development costs, which will then be trued-up as part of this re-opener. The proposed baseline allowance is subject to a PCD.

4.50 The re-opener will be assessed in two parts, in line with the GT Project Assessment Process outlined in the Compressor Emissions section.

4.51 The full rationale for our consultation position is detailed in the Bacton cost assessment section.

King's Lynn subsidence

King's Lynn subsidence re-opener	
Purpose	To address uncertainty around the costs of addressing subsidence issues at King's Lynn compressor station.
Benefits	Consumer money is not spent on projects with uncertain costs and/or scope of work.

Background

4.52 NGGT has identified issues with bi-directional flow pipelines at King's Lynn compressor station whereby ground movements caused by subsidence are causing stress on the pipework at the site, causing a safety, security of supply and environmental risks.

4.53 To address this issue, NGGT is considering options to replace the bi-directional pipework on the site by building new pipework, underpinning the existing pipework and building new pipework configurations on the site.

Consultation position

UM parameter	Consultation position
Materiality threshold	N/A
Re-opener window	April 2022 (options selection and cost assessment)
Re-opener requirements	Outlined in associated PCD

Rationale for consultation position

4.54 NGGT proposed attaching a re-opener to this investment. As this project is at an early stage of development, the final preferred option has not been selected and as such there is significant uncertainty around the final outturn cost. As such, we agree with NGGT's proposal to apply a UM.

4.55 In order to allow for further development of the optioneering at King's Lynn, we are providing a baseline allowance for project development costs, which will then be trued-up as part of this re-opener.

4.56 The re-opener will be assessed in one part, covering stages 2 and 3 of the GT Project Assessment Process outlined in the Compressor Emissions section.

4.57 The full rationale for our consultation position is detailed in the King's Lynn subsidence cost assessment section.

Compressor UMs

Compressor UM re-openers	
Purpose	To adjust NGGT revenues once compressor emission projects have sufficiently developed options and cost maturity to set a baseline allowance.
Benefits	Enables NGGT to achieve legislative compliance and protects NGGT and consumers from risks of giving a fixed allowance for projects at an early stage of development and with immature costs.

Background

4.58 NGGT's compressor fleet is affected by the MCP coming into effect in 2030, and in order to comply with this legislation and ensure gas flows can be met, NGGT has proposed a number of investments across the NTS.

4.59 Due to these projects being in an early stage of development and therefore having significant uncertainty around outturn costs, NGGT proposed a UM for the following compressor projects:

- King’s Lynn
- Peterborough & Huntingdon
- St Fergus.

Consultation position

UM parameter	Consultation position
Materiality threshold	No materiality threshold proposed - re-opener needed to decide on final option and funding for each site
Re-opener window	Site specific due to varying project timelines - see table below
Re-opener requirements	See site specific PCDs (multiple requirements)
Limits of Applicability	To costs incurred at each specific compressor site

Table 33: Proposed re-opener windows for compressor UMs

Site	Stage 2 Submission Window	Stage 3 Submission Window
Wormington	Feb 2022	Jan 2024
Kings Lynn	Sep 2022	Aug 2024
Peterborough & Huntingdon	Oct 2024	Sep 2026
St Fergus	Jun 2023	Nov 2025

Rationale for consultation position

4.60 These projects are all at an early development stage, with final options selection and detailed engineering work yet to be complete. Due to this, there is significant uncertainty around the actual costs of meeting emissions compliance and we accept NGGT's justification for this re-opener.

4.61 We also propose to include Wormington in this UM because it is at the same stage of development as the sites proposed by NGGT above.

4.62 We have proposed to accept the initial needs case for all of these projects, but do not necessarily agree with NGGT's preferred option.

4.63 For these compressor projects, we intend to include a baseline allowance to enable NGGT to complete detailed option selection, engineering design and to order long lead items from equipment manufacturers.

4.64 We also propose to review each site in two steps - first the options selection (Stage 2), then a funding review following the completion of conceptual design for the final option (Stage 3).

4.65 For full details of our assessment approach see the Compressor Emissions section.

GT Opex escalator

GT Opex escalator	
Purpose	To adjust NGGT's CAI Opex allowance following changes to its Capex allowance through uncertainty mechanisms.
Benefits	Ensures NGGT has efficient CAI allowance to deliver its Capex programme during RIIO-2.

Background

4.66 As set out in Chapter 3, our proposed view of baseline Closely Associated Indirect (CAI) costs is derived by regression analysis or historical benchmarking using cost drivers including the total baseline Capex or Regulated Asset Value (RAV). The actual Capex allowance and RAV may be different during RIIO-GT2 from the baseline view due to the effect of various UMs or mechanisms linking funding with outputs.

4.67 Our proposed approach to setting allowances for RIIO-GT2 are on a post-capitalisation basis.

Consultation position

UM parameter	Consultation position
CAI adjustment	0.754% uplift to CAI for each 1% uplift in Capex

Rationale for consultation position

4.68 We reviewed the relationship of CAI to RAV in RIIO-GT1 and observed a consistent relationship in our data (pre-capitalistion) between new assets being installed onto the network and increasing CAI costs. We therefore consider that a UM for CAI is appropriate.

4.69 Our proposed uplift for CAIs is consistent with our proposed approach to determining the efficient CAI baseline allowances. Our current view is to use the coefficient for Capex from the same POLS regression analysis, which is a 0.754% uplift to CAI for each 1% uplift in Capex. We consider this an effective method to fund an efficient level of indirect Opex caused by any additional Capex delivered through an UM.

4.70 We propose that NGGT must provide a breakdown of activity level costs for any additional Capex UM allowance requests to allow us to identify CAI costs associated with these projects. We intend to consider NGGT capitalisation rate across the whole plan when determining the costs eligible for this mechanism. This is to ensure that NGGT is not double funded due to its allowances being set on a post-capitalisation basis.

4.71 We have not applied this UM to Network Operating Costs (NOC) as in GT because we did not assess NOC using regression analysis and NGGT's Capex investments relate to NLRE, which does not impact on the overall size of the asset base.

Consultation questions

Q38. Do you agree with our proposed GT Opex escalator adjustment mechanism?

5. Innovation

5.1 Our SSMD and the Core Document identify the criteria that we have used to assess Network Innovation Allowance (NIA) funding requests.[116] Chapter 8 of the Core Document also details our proposals for the RIIO-2 NIA Framework and the Strategic Innovation Fund.

Network Innovation Allowance

5.2 We set out below our Draft Determinations on NGGT's RIIO-2 NIA funding.

Consultation position

Network Innovation Allowance	Company proposal	Consultation position
Level of NIA funding	£30.9m	£20m * Conditional on an improved industry-led reporting framework.

Rationale for consultation position

5.3 NGGT's Business Plan contained a range of NIA-related proposals. It focused on the energy system transition and addressing consumer vulnerability, with initiatives corresponding to three themes:

- fit for the future, safeguarding and preparing assets for the challenges operating for the next 50 years and in a decarbonised future
- ready for decarbonisation, focusing on future technology to better manage assets and how the NTS will transport a blended mix of 'green' gases
- decarbonised energy system, considering how hydrogen will interact with the NTS, how trading could be managed and whether direct offtakes for hydrogen can support the transport and commercial market.

5.4 NGGT's NIA proposals focus on initiatives that appear either high risk, or would not deliver benefits during the price control period. Based on this, we have reasonable confidence that projects that will be taken forward will require the NIA in order to progress. Over RIIO-2, it is for NGGT to determine which projects it will undertake and for each, it will need to demonstrate why the project cannot be funded through baseline totex, why it needs to be funded via the NIA, and how it

[116] SSMD Core Document,Paragraph 10.62.

supports the energy system transition or addressing consumer vulnerability. This will be part of the RIIO-2 NIA governance arrangements.

5.5 Our assessment of NGGT's Business Plan against the criteria from our SSMD and Core Document is set out in the Table 34 below.

Table 34: Assessment of NGGT's Business Plan against NIA criteria

SSMD/Core NIA criteria	Ofgem view
Undertaking other innovation as BAU	**Does not satisfactorily meet the criterion:** We were disappointed that the business was only willing to fund innovation for which risks 'are at a level that is acceptable to the business and/or there is a guaranteed level of return to the customer that justifies the investment'. We also share concerns of the RIIO-2 Challenge Group and NGGT's UG that innovation within BAU activities was not embedded throughout the full plan.
Application of best practices	**Satisfactorily meets the criterion including:** Evidence of the sharing of best practices across National Grid Group to help embed a culture of innovation.
Processes in place to rollout proven innovation and the evidence that this is already happening	**Does not satisfactorily meet the criterion:** We consider that there is limited evidence of the rollout of past innovation, and we additionally share the other concern of RIIO-2 Challenge Group and NGGT's UG that the plan does not clearly evidence that RIIO-1 innovation is rolled out and savings evidenced.
Processes in place to monitor, report and track innovation spending and the evidence that this is already happening	**Does not satisfactorily meet the criterion:** Consistent with our assessment of all NIA requests, we do not consider that NGGT has demonstrated that it has tried and tested processes in place to monitor, report and track innovation spending and benefits.

5.6 NGGT's proposals for NIA funding represent a substantial increase relative to RIIO-1, in which it was awarded 0.7% base revenue as NIA funding, roughly equivalent to £4.5m per year. This is despite the fact that we stated in our SSMD that companies should not rely solely on additional innovation stimulus funds but should fund more innovation in RIIO-2 as BAU using their totex.[117] Considering the increased innovation funding request, NGGT did not clearly demonstrate how it would deliver increased innovation activity.

5.7 Accordingly, we do not believe NGGT justified an increase in NIA funding relative to RIIO-1 and propose to provide NGGT £20m NIA funding for RIIO-2, which is broadly equivalent to the level of funding it received in RIIO-1.

[117] SSMD Core Document, Paragraph 10.16.

5.8 As detailed in Chapter 8 of the Core Document, we propose that all NIA funding is conditional on the implementation by the start of RIIO-2 of an improved, industry-led reporting framework. If this condition is not satisfied, our proposal is that we will not award NIA funding for RIIO-2.

Consultation questions

Q39. Do you agree with the level of proposed NIA funding for NGGT? If not, please outline why.

Appendices

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Appendix 1 – Consultation questions

NGGTQ1. Do you agree with our proposals for the Customer Satisfaction ODI-F?

NGGTQ2. Do you agree with our proposals for the Quality of Demand Forecasting incentive?

NGGTQ3. Do you agree with our proposals for the Maintenance incentive?

NGGTQ4. Do you agree with our proposals for the CCM incentive?

NGGTQ5. Do you agree with our proposals for the Residual Balancing incentive?

NGGTQ6. Do you agree with our proposals for the GHG emissions incentive?

NGGTQ7. Do you agree with out proposals for the NTS Shrinkage incentive

NGGTQ8. Do you agree with our proposals on the bespoke ODIs? If no, please outline why.

NGGTQ9. Do you agree with our proposals for the Environmental incentive?

NGGTQ10. Do you agree with our proposals for the proposed Stakeholder Satisfaction incentive?

NGGTQ11. Do you agree with our proposals on the PCDs? If no, please outline why.

NGGTQ12. Do you agree with our proposals for LO in relation to NCAM and ANCAR?

NGGTQ13. Do you agree with our proposal not to set network capability targets for RIIO2?

NGGTQ14. Do you agree with the proposal to reduce entry baseline capacity at St Fergus?

NGGTQ15. Do you agree with the proposal to reduce entry baseline capacity at Theddlethorpe?

NGGTQ16. Do you agree with our proposals on the CVPs? If no, please outline why.

NGGTQ17. Do you agree with our consultation position to allow (subject to eligibility under the BPI) the natural environment improvements CVP?

NGGTQ18. Do you agree with our proposal to re-quantify the value of the CVP?

NGGTQ19. Do you agree with our consultation position to accept (subject to eligibility under the BPI) the community initiatives CVP?

NGGTQ20. Do you agree with our proposal to reject the Blackrod Reinforcement project?

NGGTQ21. Do you agree with our proposed allowances for LRE?

NGGTQ22. Do you agree with our proposed GT Project Assessment Process?

NGGTQ23. Do you agree with our proposal to provide baseline funding for Hatton subject to us conducting further volume and cost assessment prior to our Final Determination?

NGGTQ24. Do you agree with our proposal to accept the need for investment, provide baseline funding for development work and assess the full project costs during RIIO-GT2 for the compressor projects at Stage 1 - Needs Case Assessment (Wormington, St Fergus, King's Lynn and Peterborough and Huntingdon)?

Q25. Do you agree with our assessment approach to asset health work, including our proposal to use a combination of baseline funding, PCDs and a UM for the various cost sub-categories?

Q26. Do you agree with our proposed approach for costs confidence, including our view and rationale for high and low confidence cost categories and costs subject to a BPI Stage 3 penalty?

NGGTQ27. Do you agree with our proposed approach to approve the need for investment, provide development funding and assess the full project costs through a UM during RIIO-GT2, for the Bacton, St Fergus subsidence and King’s Lynn subsidence projects?

NGGTQ28. Do you agree with our proposed baseline allowances for Stopples, GRAID and decommissioning of redundant assets and compressors?

Q29. Do you agree with our proposed assessment approach and baseline allowances for non-operational Capex costs, including IT&T, STEPM, property and vehicle fleet investment?

NGGTQ30. Do you agree with our proposed allowances for Physical Security Capex and Opex?

Q31. Do you agree with our assessment approach and baseline allowances for NGGT’s Opex costs, including network operation costs, BSC, CAI and Quarry and Loss?

Q32. Do you agree with our proposed approach to Pensions costs?

NGGTQ33. Do you agree with our proposed approach to assessing risk?

Q34. Do you agree with our proposed UM for incremental capacity, specifically the timing and content of the Pre-Application Notification stage, the Needs Case and Cost Assessment timings, and the need for an exceptional events mechanism?

NGGTQ35. Do you agree with our proposed UM, materiality threshold and trigger for pipeline diversion costs?

Q36. Do you agree with our decision to retain a UM for Quarry and Loss costs relating to loss of development and mineral sterilisation only, and do you agree with our proposed UM parameters?

Q37. Do you agree with our proposed asset health UM, specifically basing the UM on improved quality of cost data and volume measurement and assessing costs ex post?

Q38. Do you agree with our proposed GT Opex escalator adjustment mechanism?

Q39. Do you agree with the level of proposed NIA funding for NGGT? If not, please outline why.

Appendix 2 - Proposed views following BPI Stage 1 assessment

This Appendix sets out further details to support our proposed consultation position that NGGT failed Stage 1 of the BPI. This focusses on cost and engineering aspects of the Minimum Requirements, as set out in our Business Plan Guidance (BPG). Detail on our proposed overall BPI Stage 1 position, and our rationale, can be found in Chapter 10 of the Core Document.

Table 35: Consultation proposals

Minimum Requirement	**Area:** All Asset Health EJPs **Submitted totex:** £610m	**Area:** Increasing Resilience at Blackrod **Submitted totex:** £8.9m	**Area:** Hatton Compressor Emissions **Submitted totex:** £74.7m	**Area:** Compressor Decommissioning **Submitted totex:** £37m
3.10. In proposing costs for operating and developing their networks, we expect companies to explain their costs/workload forecasts, particularly where these diverge from historical trends.	No material concerns	No material concerns	We assessed the needs case for investment in emissions compliance at the Hatton compressor station in 2019, and agreed to review the efficient costs for this as part of the RIIO-GT2 price control. No supporting information in NGGT's annexes was provided – only the total funding request in the BPDT. By opting not to submit any	No material concerns
3.14. Business Plans must include… evidence of the efficiency of their costs, for example as compared to historical benchmarks and/or benchmarking with national and international comparators	No material concerns	No material concerns		NGGT submitted a funding request for decommissioning of compressors at multiple sites deemed to be either surplus to requirements or due for replacement due to emissions legislation. No supporting information was provided to support these costs, other than an

Minimum Requirement	**Area:** All Asset Health EJPs **Submitted totex:** £610m	**Area:** Increasing Resilience at Blackrod **Submitted totex:** £8.9m	**Area:** Hatton Compressor Emissions **Submitted totex:** £74.7m	**Area:** Compressor Decommissioning **Submitted totex:** £37m
			supporting material for Hatton, NGGT has failed to meet the above requirements, as it is impossible to consider whether the funding request meets any of the criteria described.	explanation that costs were determined from 'projects undertaken in RIIO-1, third party quotations and engineering judgement'. When we queried the compressor decommissioning costs, NGGT stated that these were based upon a study undertaken ahead of the 2015 IED re-opener by Amec Foster Wheeler. In this study, efficiency savings were presented for sites where multiple compressor units were to be decommissioned. NGGT's methodology does not incorporate these efficiencies, and instead is based around multiplying the cost for a single unit by the number of units at a site.
3.21. … CBAs and engineering justifications should… act as a robust decision support tool, open to scrutiny and challenge in conjunction with other appropriate	There is little information on how the intervention volumes have been calculated. The lack of information made available in the EJPs on how the intervention volume had been calculated would have been justifiable if the NARMS tools were the source of	No material concerns	No material concerns	No material concerns

Minimum Requirement	**Area:** All Asset Health EJPs **Submitted totex:** £610m	**Area:** Increasing Resilience at Blackrod **Submitted totex:** £8.9m	**Area:** Hatton Compressor Emissions **Submitted totex:** £74.7m	**Area:** Compressor Decommissioning **Submitted totex:** £37m
means of justification for investment decisions	the intervention volumes as this is a method that Ofgem have previously approved. However, NGGT justified the volumes using bespoke "bottom-up" methods but provided no description of what these were or how they were calculated. This approach was replicated across every intervention volume calculation in the BP and background inspection data, assumptions and method had to be requested via SQs for all asset health spend in the BP (Circa £600m) In total 40+ new methods with a value of £500m were subsequently provided. The lack of justification methods provided in the EJP meant that the spend requested was not open to scrutiny which is the primary purpose of providing EJPs and a BP.			
3.21. … CBAs and engineering justifications should… - be transparent about which risks, costs and benefits have neither	No inspection data, calculation methods or assumptions used to generate the intervention volumes for asset health work were provided in the December draft of the BP The time taken to receive data	This paper centres on the risk of failure of a pipeline due to external interference. NGGT assumed that the pipeline will fail	No material concerns	No material concerns

Minimum Requirement	**Area:** All Asset Health EJPs **Submitted totex:** £610m	**Area:** Increasing Resilience at Blackrod **Submitted totex:** £8.9m	**Area:** Hatton Compressor Emissions **Submitted totex:** £74.7m	**Area:** Compressor Decommissioning **Submitted totex:** £37m
been considered nor monetised as part of the analysis - be transparent about assumptions, inputs and rationale for decisions, calculations and results	through SQs has created a significant issue for Ofgem and the quality of evidence provided within the papers is not in line with what would be expected given the levels of spend requested. We consider the extent of this failure to be serious and this was replicated across all asset health papers.	because of external interference and requested both baseline funding and a CVP reward using poor quality data. However, no QRA work was completed in relation to this request, making it impossible for us to verify NGGT's assumptions.		