

RIO-2 Costs & Outputs Working Group

Gas Transmission



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This is a big slidepack, and we will park some issues.
Also many slides are for info only

10:00 – **Introductions**

10:10 – **Recap of previous working group**

10:30 – **Review of cost assessment approach for RII01**
- NGGT presentation

11:30 – **Break**

11:45 – **Continue discussion on cost assessment approach**

12:30 – **Lunch**

13:00 – **Business Plan Data Templates**
- Discussion on separation of SO and TO costs
- Discussion on granularity of cost types

14:00 – **Cost definitions**

14:45 – **Break**

15:00 – **Cost Benefit Analysis**
- NGGT presentation

16:00 – **AOB**

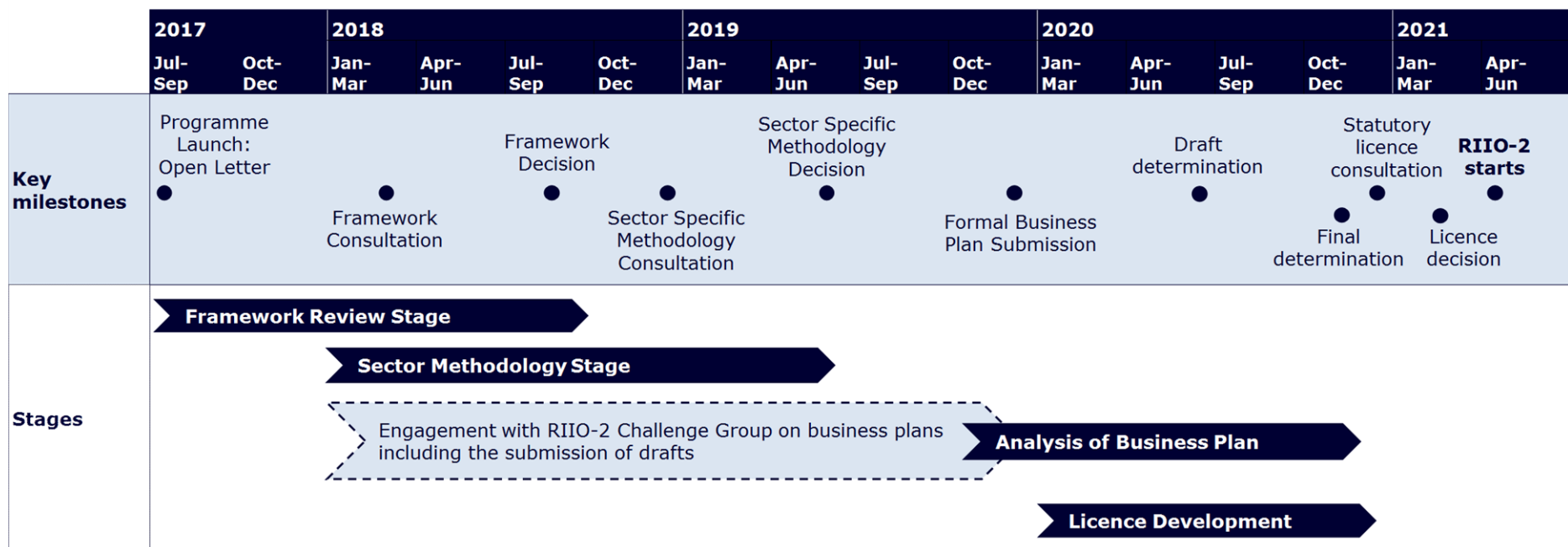
16:15 – **Next steps**

16:30 – **Close**

Recap

Timeline for activities and deliverables (1 of 2)

Indicative High-Level RIIO-2 Plan for ET, GT, GD and ESO Sectors



Initial thinking only – further development/consultation to follow

Table 1: Indicative high-level milestones for developing sectoral price controls for electricity transmission, gas transmission, gas distribution and electricity system operator

Indicative high-level milestones ET, GT, GD and ESO	
March 2018	RIIO-2 framework consultation
April 2018	RIIO-2 enhanced engagement guidance
July 2018	RIIO-2 framework decision
December 2018	Sector specific methodology consultation
May 2019	Sector specific methodology decision
Q4 2019 ⁴¹	Companies Business Plan formal submission to Ofgem (along with RIIO-2 CCG and user group reports on Business Plan to Ofgem)
Q1/2 2020	Open hearings
Q2 2020	Draft determination
November 2020	Final determination
December 2020	Statutory Licence consultation
February 2021	Licence decision
1 April 2021	Start of RIIO-2 price control for ET,GT,GD and ESO

- **Inform GT business plan submissions**
 - ✓ **Content**
 - ✓ **Form**
 - ✓ **Evidential base required**
- **Inform development of analytical techniques for assessment of business plan**
- **Forum for Ofgem, NGGT and stakeholders to jointly inform the development of a toolkit approach for assessing efficient costs in the RII02 business plan.**
- **Forum for working out the practical implementation of performance monitoring through course of RII0-ET2**

- **Group is an advisory body, not a decision making body. Ofgem is under no obligation to accept views raised by the group**
- **While consensus is welcome in some areas, it is not the aim of the CAWG**
- **Membership comprises Ofgem, NGGT representatives and other interested parties**
 - ✓ **Expectation that members will be active participants**
 - ✓ **Chatham House Rules apply**
 - ✓ **Discussions not binding on GEMA**
 - ✓ **The meetings will be minuted**
 - ✓ **Minutes will be disseminated to those who could not attend and published on Ofgem's website**

- **Meet at ~ 5 week intervals - Scope of additional ad hoc meeting if unanimous agreement within the group.**
- **Run through to business plan submission (late 2019)**
- **Publish brief, non-attributable minutes**

- **Review RIIO-GT1 cost analysis work program**
 - ✓ **Determine what is still suitable, what needs to be changed**
- **Review Cost Drivers and Assessment methods for**
 - ✓ **Totex**
 - ✓ **Capex**
 - ✓ **Opex**
- **Consider the approach to and treatment of:**
 - ✓ **Business support costs**
 - ✓ **Contractor modelling**
 - ✓ **Whole life costs**
 - ✓ **Innovative solutions**
 - ✓ **Investment avoidance**
 - ✓ **Associated investment costs**
- **Cross Sector WG to discuss specific common areas**

Establish principles for identifying and using:

- Data sources in comparative analysis
- Expert review
- CBA

Determine appropriate cost drivers

Unit costs

Benchmarking approach

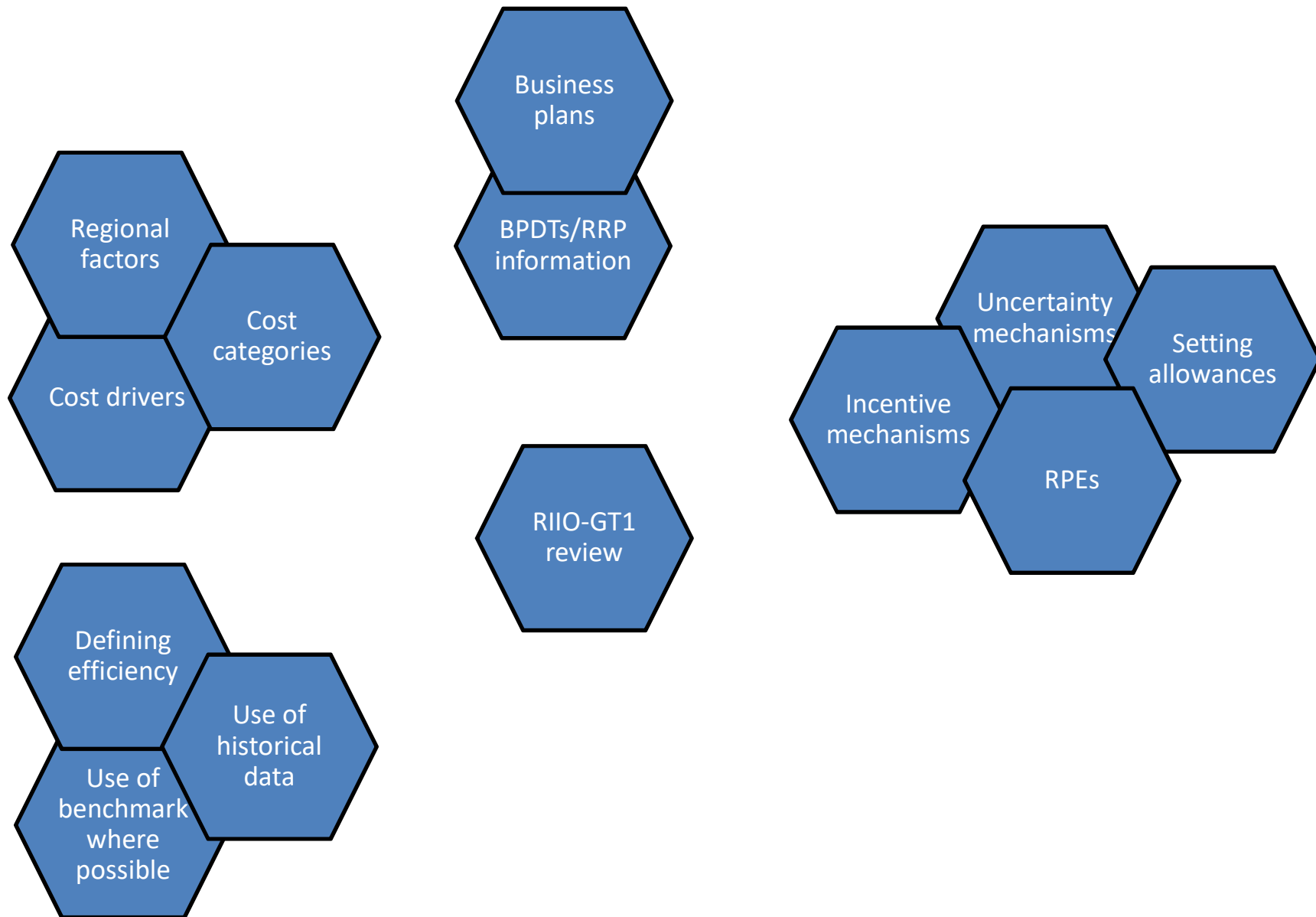
- Bottom up
- Top down

Identifying material uncertainties and developing uncertainty mechanisms (overlap with policy WG)

View on future work requirements

- Volumes
- Scope/nature of work
- Compatibility with whole system view

Themes



Initial thinking only – further development/consultation to follow

- We will specify outputs as a set of **consumer-facing outcomes** that we expect network companies to deliver.
- We are proposing to consolidate existing output categories into three new proposed categories as described below.
- We have incorporated early feedback on these from our various sector-specific working groups.

Improve the consumer and network user experience

- *Network companies must deliver a high quality and reliable service, to all network users and consumers, including those who are vulnerable*

Support the energy system transition

- *Network companies must enable the transition to a low carbon, consumer-focused energy system*

Improve the network and its operation

- *Network companies must deliver a safe, sustainable, and resilient network that is more responsive to change*

Scenarios

- Sceptical about whether choosing a single baseline scenario is a good idea, and suggested that more uncertainty mechanisms are built in.
- What is the impact of the FES for GT? Discussed later.

CBA

- Action for NGGT and Ofgem to carry out further thinking. Will be discussed further during this session.

Review of RII01 cost assessment approach

Recap slides are presented in the annex of this pack

NGGT to present its RIIO-1 cost assessment overview spreadsheet

An Output focused approach using a toolkit of methodologies:

- ✓ Totex Benchmarking
 - ✓ Disaggregated Benchmarking
 - ✓ Historical Trend Analysis
 - ✓ Asset Unit Cost Analysis
 - ✓ Output Cost Analysis
 - ✓ Expert review
 - ✓ Project by project review
-
- Utilising a combination of top down and bottom up analysis
 - Annual cost reporting data allows for greater scope in using disaggregated benchmark approaches.
 - Benchmarking Totex over a number of years using suitable cost drivers

- Carry out both load and non-load related modelling.
- Use unit cost analysis to assess both load related and non-load related Capex, expert advice used to validate appropriate levels of unit costs for core asset types.
- Company forecasts assessed using historical trend, quantity and unit cost analysis to validate total NLRE cost.
- Assess changes in efficient levels of unit costs over time – onus on TO/SO to demonstrate efficiency of unit costs.
- Project by project reviews using expert advice on efficient level of costs for representative schemes and large scale projects.
- Bottom up analysis to be used for projects of a sufficiently large scale.
- TO encouraged to take the whole life cost of losses into account – explain the way cost of losses are accounted for in equipment purchases and project designs

- Direct Operating Expenditure – assess plans put forward by TO/SO to determine if proposed level of costs is consistent with delivery of primary outputs and represents long term value for money
- A range of cost assessment tools employed - disaggregated benchmarking, historical trend analysis, unit quantity analysis, unit cost analysis and expert review of the programme
- More disaggregated and bottom up analysis for direct Opex and CAIs – TO forecasts for unit quantities and costs compared to historical quantities and costs, trends and benchmark comparators
- Benchmark direct operating costs - apply similar trend analysis, comparison and benchmarking to unit costs and quantities

RIIO2 cost assessment principles

Taking into account RIIO 1 lessons learnt

Consolidate existing outputs into three categories to ensure they are simple and intuitive:

- **Licence Obligations** – will set enforceable minimum standards
- **Price Control Deliverables (PCDs)** – linked to baseline funding, sets out what happens if an activity is not delivered, delivered late or to lower specification.
- **Output Delivery Incentives (ODIs)** – improve service quality with incentive mechanisms which reward or penalise for performance.

Protect consumers against forecasting risk

- Where appropriate use competition rather than forecasts to set prices for new, separable and high value investment projects
- Simplified incentives to reward well justified, ambitious and high quality plans
- Index uncertain costs where possible
- Use volume drivers where unit costs are stable but quantities difficult to predict
- Use revenue drivers or within period mechanisms such as SWW where uncertainty over the scope of work and potential costs are significant
- Incentivise companies to drive down costs when setting baseline allowances
- Consideration given to long term view of costs spanning multiple price controls
- Consider resetting certain cost allowances automatically during the price control period.

Our outputs and incentive framework should as far as possible adhere to the following principles:

In setting outputs -

- Be as complete as possible;
- Focus on simpler, more intuitive output categories, of value to consumers;
- Allow comparison of performance across companies where there is sufficient commonality; and
- Capture the long-term nature of outputs.

In setting incentives and determining consequences -

- Reflect the network services that existing and future consumers require, holding companies to account where they fail to deliver;
- Provide the right balance between rewards and penalties in the context of the challenges facing the companies; and
- Enable clear regulatory treatment of outputs to be delivered in the next price control period.

Need for investment

- What incremental improvement does investment deliver?
- Is there persuasive evidence that an investment is required?
- Where appropriate, is there evidence – assured by the consumer challenge group – that consumers support the project?

Best option for customers

- Does the investment deliver outcomes that reflect customers' priorities?
- Did the company consider an appropriate range of options with a robust cost–benefit analysis before concluding that the proposed option should be pursued?
- Is there persuasive evidence that the proposed solution represents the best value for customers in the long term, including evidence from consumer engagement?
- Has risk been assessed? Have flexible, lower risk solutions been assessed?

Need for investment

- Is there persuasive evidence that the cost estimates are robust and efficient?
- Is there high quality third party assurance for the robustness of the cost estimates?
- Expect companies to explain how their efficiency gains compare to broader evidence of efficiency gains from best practice in the wider economy.
- Where practicable, we expect companies to benchmark their performance, not only against their peers in the energy sector, but also against performance in other sectors.

Need for investment - Are customers protected if the investment is cancelled, delayed or reduced in scope?

Affordability - Has the impact on affordability been considered?

Board assurance - Does the company's Board provide assurance that investment proposals are robust and deliverable, that a proper appraisal of options has taken place and that the option proposed is the best one for customers?

CBAs in plan & Post Investment Appraisal

- How are TOs developing their approach to CBAs and how will this be reflected in Business Plans and subsequent reporting during the Price Control?
- Could CBAs be applied to activities rather than projects?

Monetised Risk

- How are TOs developing their approach to monetising risk and how will this be reflected in Business Plans and subsequent reporting during the Price Control?
- How will monetized risk be used to inform CBAs?

Baseline Funding

- Best methodology for differentiating between ex-ante funding & the appropriate use of Uncertainty Mechanisms?
- Well Justified Plans and how TO's intend to deal with uncertainty within their plans?
- How will TO's address any material departures in delivery plan? What happens if an activity is not delivered, delivered late, or to a lower specification?

BPs dealing with scenario divergence

- What plans do TOs have to deal with any material scenario divergence in their plan submission and the resultant activity & funding levels in RIIO2

Cost Categorisation

- Does current unit cost/activity categorisation need to be changed?
- Any issues or inconsistencies in reporting against current categorisations?
- What value, if any, do we achieve by distinguishing Direct Opex, does it inhibit solution selection?
- What value, if any, do we derive from reporting overhead capitalisation

Cost Drivers

- What makes a good cost driver?
- Any better/new cost drivers that could be used?

Cost Modelling

- Should we continue to use both Top Down & Bottom up approaches to cost assessment?
- Does disaggregated modelling adequately inform overall cost performance?
- How should weightings for different cost models & cost drivers be determined?

Physical Audits

- Views on Ofgem conducting physical asset audits pre & post intervention?

Cost Summary Table

- Intention to include Cost Summary table for Transmission reporting (akin to Table C1 in ED) does this raise any undue concerns with TOs?

Lunch

Business Plan Data Templates

- The Business plan data template will be a natural evolution of the current RIGs with further modifications to cater for RIIO-2 policy decisions.
- We will explore the need for greater level of standardisation between ET and GT, both in terms of general language and structure of information.
- Recognition that price controls are artificial boundaries. Requirement for greater transparency on investment cycle beyond RIIO-2. The multi-period approach better reflects companies' natural corporate cycle for investment.
- Requirement for greater transparency on companies' non-load asset intervention strategy. Greater level of disaggregated reporting across all non-load asset categories - further discussions required around definitions and categorisations - and the treatment of high value non-load assets (e.g reactive compensation).

1. Purpose and principles of cost assessment
2. Business Plans: purpose and principles
3. Business Plan Template Outline Proposals

- The objective of our cost assessment, given Ofgem's role to make a positive difference for energy consumers, is

to set cost allowances
that are achievable by
efficient operators in
the sector

whilst incentivising
long term cost
reductions and good
asset stewardship.

- The aim is to encourage and reward open minded, longer term, innovative thinking by network companies when deciding how best to deliver.

Robust

the methodology should be perceived to be robust by stakeholders.

Transparent

the methodology and rationale for its use should be clear, easy to understand and easy to replicate.

Promotes efficiency

the methodology should promote efficient cost management, provide value for money for delivering outputs, encourage innovation while protecting consumers from unnecessary expenditure and minimise the potential for network companies to favour one cost type over another.

Consistent

the methodology should be consistent with wider RIIO framework.

Reasonable

the methodology should be developed in a way that enables data collection and compilation to be undertaken without both Ofgem and network companies over-stretching their resources.

Adaptable

the methodology should be agile and remain fit for purpose given the likelihood of material changes as network roles evolve

Proportionate

the methodology should be developed in a way that is proportionate to the magnitude of costs involved and to avoid Ofgem and network companies over-stretching their resources.

1. View of efficiency for ex ante allowances

The best value for consumers now and in the future might be obtained where:



1. Enable NGGT to submit required data to Ofgem that:
 - a) is comprehensive enough to enable Ofgem to assess the justification and efficiency of NGGTs proposals in their entirety,
 - b) enables a range of assessment techniques to be employed at both totex and category specific levels,
 - c) minimises the requirement for future data requests during the assessment process.
2. Alignment with narrative submissions
3. Compatible with expectations on RIIO-T2 annual reporting

1. Move away from capex/opex distinction to totex reporting
2. Better enable related activities to be considered together
3. Remove uncertainty due to differences and changes in capitalisation and accounting policies
4. Allowances set on same basis as we expect NGGs to report annually in RIIO-T2
5. Simplify the categorisation and align better with Ofgem's assessments

Reduce to three level categories:

1. Load Related Expenditure (LRE)

- No change from current categorisation

2. Non-Load Related Expenditure (NLRE)

- All current load categories and majority of current non-load categories
- Plus elements of direct opex

3. Indirect and Non-Operational Expenditure (INOE)

- Non-operational capex
- Business Support
- Closely Associated In-directs
- Plus some elements from NLR

TO Capex	Load Related - Baseline*
	- LR Capex - Entry
	- LR Capex - Exit
	- LR Capex - Bi-directional
	- LR Capex - Network Flexibility (ex ante)
	Load Related - Incremental
	- LR Capex - Entry
	- LR Capex - Exit
	- LR Capex - Bi-directional
	- LR Capex - Network Flexibility (not triggered)
	Non-Load Related
	Customer Contributions
	Non-Operational Capex
	RPEs (TO Capex)
TO Opex	Direct Opex
	Business Support Costs
	Closely Associated Indirects
	RPEs (TO Opex)
SO Capex	Capex
	RPEs (SO Capex)
SO Opex	Direct Opex
	Business Support Costs
	RPEs (SO Opex)

Mapping Existing Categories: Load Related Expenditure

Categories				
TO capex	Load related	Baseline		Entry
TO capex	Load related	Baseline		Exit
TO capex	Load related	Baseline		Network flexibility (ex ante)
TO capex	Load related	Baseline		Pension deficit contributions capitalised
TO capex	Load related	Baseline		Offtakes
			Total LR baseline	
TO capex	Load related	Uncertainty mechanism	LR incremental (triggered)	Entry
TO capex	Load related	Uncertainty mechanism	LR incremental (triggered)	Exit
TO capex	Load related	Uncertainty mechanism	LR incremental (triggered)	Interconnector
TO capex	Load related	Uncertainty mechanism	Total LR incremental (triggered)	
TO capex	Load related	Uncertainty mechanism	LR incremental (not triggered)	Entry
TO capex	Load related	Uncertainty mechanism	LR incremental (not triggered)	Exit
TO capex	Load related	Uncertainty mechanism	LR incremental (not triggered)	Interconnector
TO capex	Load related	Uncertainty mechanism	Total LR incremental (not triggered)	
TO capex	Load related	Uncertainty mechanism	LR incremental	Network flexibility
TO capex	Load related	Uncertainty mechanism	LR incremental	Pension deficit contributions capitalised
			Total LR incremental	

It may be possible to consolidate or remove some sub-categories. However, there may also be a need for some additional sub-categories and for some sub-categories a greater level of disaggregation may be required.

Mapping Existing Categories: Non-Load Related Expenditure

Non-Load Related Expenditure

RIIO-T1 Cost Category	RIIO-T1 Cost Area
Non Load	RRP (baseline)
	Asset Health
	Emissions reduction
	Other externally-driven
	Costs of discontinued projects
	Diversions
	IED Decommissioning
	Decommissioning
Non Load	RRP (UM)
	Asset Health
	Emissions reduction
	Security resilience
	Quarry & loss of development
	Pipeline diversion costs
	Innovation rollout
	Moved Out of Category
	Moved Into Category

RIIO-T2 Cost Category	RIIO-T2 Cost Area	Potential new categories
Non-Load Related Expenditure	RRP (baseline)	RRP (baseline)
	Asset Health	Civil works
	Emissions reduction	
	Other externally-driven	
	Costs of discontinued projects	
	Diversions	
	IED Decommissioning	
	Decommissioning	
	Fault Repairs	
	Planned Inspections & Maintenance	
	Vegetation Management	
Non-Load Related Expenditure	RRP (UM)	
	Asset Health	
	Emissions reduction	
	Pipeline diversion costs	
	Innovation rollout	

It may be possible to consolidate or remove some sub-categories. However, there may also be a need for some additional sub-categories and for some sub-categories a greater level of disaggregation may be required.

Mapping Existing Categories: Indirect and Non-Operational Expenditure

Indirect and Non-Operational Expenditure

RIIO-T1 Cost Category	RIIO-T1 Cost Area RRP (Baseline)
Non-Operational Capex	IT Expenditure (Projects >£1m)
	Vehicles
	Land and Buildings
	Fixtures and fittings
	Plant and Machinery
Closely associated indirects	Operational IT & Telecoms
	Project Management
	Network Design & Engineering
	System mapping
	Engineering Management & Clerical Support
	Network Policy (incl. R&D)
	Health, Safety & Environment
	Operational Training
	Stores & Logistics
	Vehicles & Transport
	Market Facilitation
Business Support Costs	Network Planning
	IT & telecoms
	Property management
	HR & non-operational training
	Finance, audit & regulation
	Insurance
	Procurement
Direct Opex	CEO & group management
	Fault Repairs
	Planned Inspections & Maintenance
	Vegetation Management
	Operational Property Management
	CNI
	Security (Armed Guards)
	Quarry and Loss Development
	BT 21 CN Teleprotection
	Allowed Innovation Costs (incl. IFI)

	RRP (Baseline)
Direct Opex	Quarry and Loss Development
	Physical Security Costs

Moved Out of Category

Moved Into Category

RIIO-T2 Cost Category	RIIO-T2 Cost Area RRP (Baseline)
Indirect and Non-Operational Expenditure	IT Expenditure (Projects >£1m)
	Vehicles
	Land and Buildings
	Fixtures and fittings
	Plant and Machinery
	Operational IT & Telecoms
	Project Management
	Network Design & Engineering
	System mapping
	Engineering Management & Clerical Support
	Network Policy (incl. R&D)
	Health, Safety & Environment
	Operational Training
	Stores & Logistics
	Vehicles & Transport
	Market Facilitation
	Network Planning
	IT & telecoms
	Property management
	HR & non-operational training
	Finance, audit & regulation
	Insurance
	Procurement
	CEO & group management
	Operational Property Management
	CNI
	Security (Armed Guards)
	Quarry and Loss Development
	BT 21 CN Teleprotection
	Allowed Innovation Costs (incl. IFI)

	RRP (Baseline)
Indirect and Non-Operational Expenditure	Quarry and Loss Development
	Physical Security Costs
	Security resilience
	Quarry & loss of development

It may be possible to consolidate or remove some sub-categories. However, there may also be a need for some additional sub-categories and for some sub-categories a greater level of disaggregation may be required.

Mapping Existing Categories: SO Indirect and Non-Operational Expenditure

Indirect and Non-Operational Expenditure

RIIO-T1 Cost Category

RIIO-T1 Cost Area RRP (Baseline)

SO Capex	Scheme Based
	Operational Situational Awareness
	Operational Review
	Customer Sales & Interaction Management
	Market Facilitation - National Grid IS
	Market Facilitation - xoserve
	Data Centres
Direct Opex	Planning
	Real Time Operation
	Operational Support
	IS Business Resource
	Market Facilitation
	Engineering Support
	Xoserve Opex
Business Support	Offshore Transmission Project
	IT & telecoms
	Property management
	HR & non-operational training
	Finance, audit & regulation
	Insurance
	Procurement
	CEO & group management

RRP (UM)

SO Capex	Agency costs
	Enhanced security costs

Moved Out of Category

Moved Into Category

RIIO-T2 Cost Category

RIIO-T2 Cost Area RRP (Baseline)

Indirect and Non-Operational Expenditure	Scheme Based
	Operational Situational Awareness
	Operational Review
	Customer Sales & Interaction Management
	Market Facilitation - National Grid IS
	Market Facilitation - xoserve
	Data Centres
	Planning
	Real Time Operation
	Operational Support
	IS Business Resource
	Market Facilitation
	Engineering Support
	Xoserve Opex
	Offshore Transmission Project
	IT & telecoms
	Property management
	HR & non-operational training
	Finance, audit & regulation
	Insurance
	Procurement
	CEO & group management

RRP (UM)

Indirect and Non-Operational Expenditure	

It may be possible to consolidate or remove some sub-categories. However, there may also be a need for some additional sub-categories and for some sub-categories a greater level of disaggregation may be required.

Suite of secondary workbooks linked to a primary Totex (summary) workbook

- Single very large workbook would be slow and cumbersome for submission and for analysis
- Disaggregating workbooks:
- Allows for resubmission of individual elements without resubmission of entire BPDT
- Easier to manage multiple scenarios
- Greater flexibility

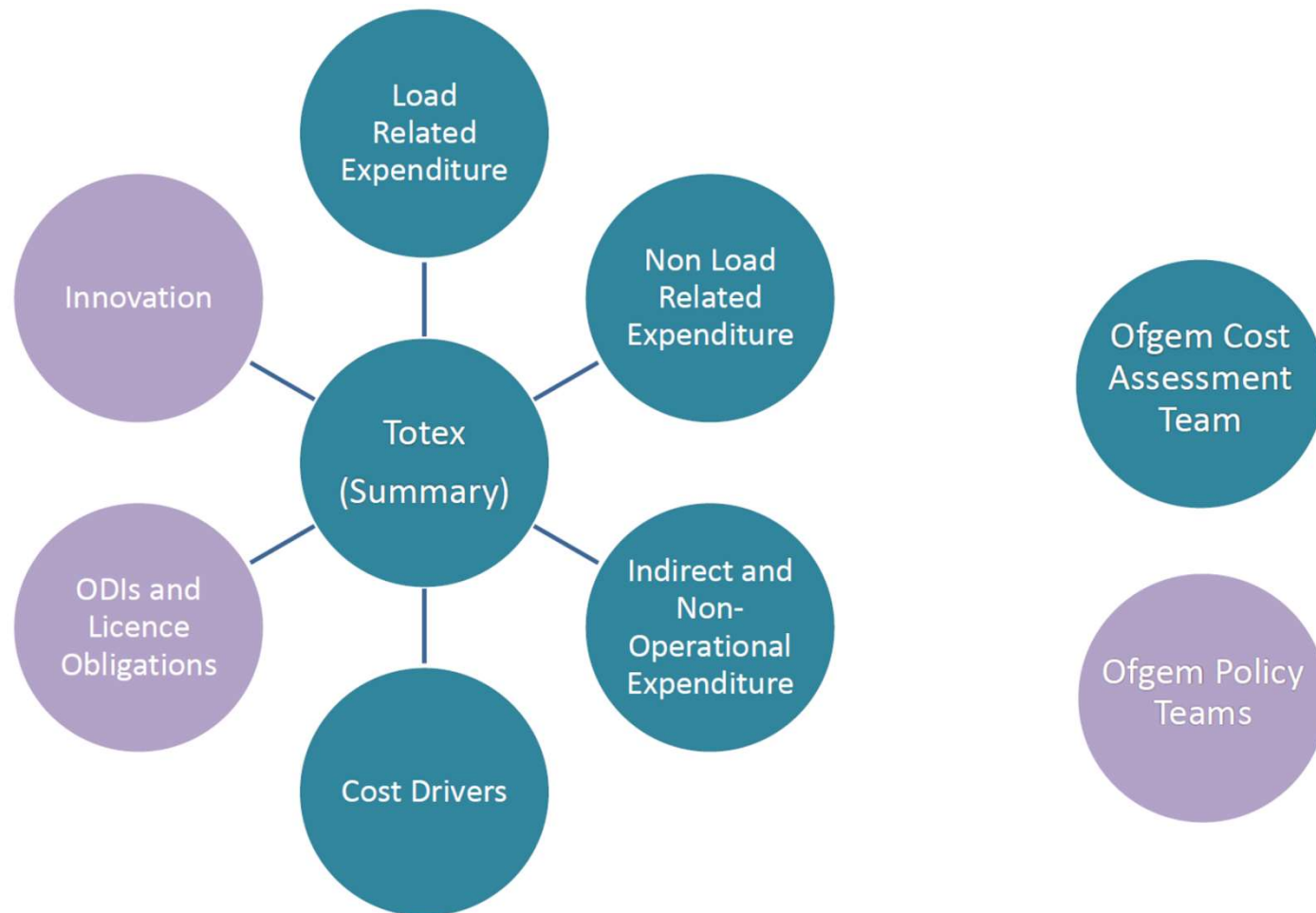
Necessary to ensure structural consistency across secondary workbooks and integrity of links to primary Totex workbook

- Identify cells linked to Totex through colour coding

One way link (secondary to primary)

- Avoid secondary to secondary linking

Effective version control essential



Topic	Proposals
Historical data	BPDTs to contain data from start of RIIO-T1
Post RIIO-T2 data	BPDTs to contain annual data for 8 years post T2
Scenarios	Different scenarios to be submitted as separate workbooks
Look and feel and colour key conventions	To be consistent across sectors
Naming conventions	Agreed and defined naming conventions for workbooks, licensee names, category names, etc. to enable easy referencing and lin
Workbook Structure	Consistent structure across workbooks to enable easy referencing and linking
Supporting workbooks/workings	Where it will improve transparency or Ofgem's understanding then ETOs should provide additional workings as supporting linked workbooks or additional sheets within BPDTs
Alignment with narratives	All tables, figures, charts within narrative should be provided in Excel format with links to BPDTs where possible.

1. NGGT to provide views in writing on:
 - Overall proposals
 - Categorisations
 - 1.New sub-categories required
 - 2.Sub-categories that can be combined
 - 3.Sub-categories were further disaggregation required
- 2.Ofgem to provide mock-up sample workbooks for review

Break

Cost definitions

RIO 1 Definitions (from RIGs)

- Accounting Costs
- Accruals and Prepayments
- Annual iteration Process
- BT 21 CN Teleprotection
- Cash Controllable Costs
- Change in market value of investments
- Closely Associated Indirect Costs
- Customer / Capital contributions
- De Minimis
- Direct Costs
- Directly Attributable Costs (Network Innovation)
- Excluded services
- Fault Repairs
- GDN
- Investment income
- Investment management expenses
- Low risk assets
- MOD Term [TO and SOMOD for SO]
- Network rates
- NIA Allowable Expenditure
- NIA Direct Benefits
- NIA Eligible Expenditure
- NIA Unrecoverable Project Expenditure
- NIC Eligible Bid Preparation Costs
- NIC funding

Are any of these cost definitions likely to change? What might these changes look like?

Example: Innovation in RIO 2 framework is proposed to move more spending into BAU, align funding with energy system transition, co-ordinate with public sector funding and bring in more third party involvement – would the NIC/NIA cost definitions fit in with this?

RIO 1 Definitions (continued)

- NICF
- Non – Transmission
- Non Controllable Costs
- Operational Property Management
- Outputs
- Pension Deficit Payments relating to Established Deficit
- Physical Security Expenditure
- Planned Inspections and Maintenance
- Quarry and Loss Development
- RAV
- Related Party Margins
- Return seeking assets
- Royalties Revenues
- Returned Royalties Income
- Retained NIC Royalties
- Salary / staff costs
- Security (Armed Guards)
- Security (pertaining to SO)
- TIRG (Transmission Investment for Renewable Generation)
- Totex
- Transmission Licence Fee
- TII (Transmission Investment Incentive)
- Vegetation Management

Can these categories be broken down further or combined?

Example: Closely Associated Indirects – would it be better to break this down into operational training, vehicles and transport, project management etc?

- Initial presentation from NGGT – purpose is to propose any significant changes for RIIO-2 for discussion with the group.

Cost Benefit Analysis

- CBAs are needed to:
 - ✓ Demonstrate the range of options considered for a given issue
 - ✓ Demonstrate how the key parameters for each option have been quantified
 - ✓ Evidence the decision making process that led to the preferred choice being made
 - ✓ Give confidence that the proposition represents value for money to consumers
- CBAs have evolved over the years. We expect:
 - ✓ all major investment proposals to be underpinned with a CBA
 - ✓ best practice to be adopted for all CBAs
 - ✓ Uncertainty estimates to be incorporated as appropriate

Why CBA?

Framework Decision - How networks are used.

- Protect consumers against inefficient network investment and utilisation.
- Ensuring that company business planning processes subject new investment to higher hurdles.
- Consider differing risk allocations for certain investments.

RIIO1 – What was done?

- Varied across sectors
- Not generally formalised

RIIO2 – What is being done?

- Develop consistency and guidance
- Agree assumptions
- Define applications (activity / materiality)
- Benefits to be included

CBA - Overview

When CBA
Required

Materiality
Collective CBA for small projects of similar type

Assumptions

Green book – discounting etc.
HSE – cost of life / disproportionate factor
Spackman approach

Options

Strategic options development
Shortlisting

Benefits

Scope of benefits to be included

Risk

Sensitivity analysis
Uncertainty

When is a CBA required

- Materiality test
- Cost category
- Activity category
- Project specific
- Reopeners

What are the views on materiality? when should a CBA be submitted? What types of work should it cover?

Assumptions

Key assumptions should be aligned and agreed

- Timeframe for benefits
- VPF & VPI
- Cost of Capital
- Discount factor (including risk to life)
- Disproportionate factor
- Adjustments for inflation
- Environmental (GHG)

Agreement on assumptions, use green book, HSE guidance, other sources? Are there others assumptions to consider?

Spackman approach – any concerns?

Approach to evaluating benefits

Social benefits

- Valuing risks to life and health
- Greenhouse gas emissions and energy efficiency
- Value of the natural environment

Other costs avoided

- Reduced maintenance
- Less failures

Significant unmonetisable benefits

- Retaining flexibility

What benefits should be considered? Are there additional areas of the green book we should be considering?

Options Development (long list)

Consideration and prioritisation of engineering options.

- Like for like / non-like for like replacement
- Refurbishment (or partial replacement)
- Decommissioning / Mothballing
- Ongoing maintenance
- Innovation options
- Asset Exchange
- Alternative technological solutions
- Constrained future use of assets (limited life / emergency use)
- Commercial actions (constraint management)
- Consider the status quo / do nothing option

How are long list options developed and subsequently shortlisted?

Are there links with NAO / PARCA which should be considered?

What about deferred investment?

Sensitivity Analysis / Uncertainty

- Sensitivity analysis explores the sensitivity of the expected outcomes to potential variation in input variables.

Switching value

What if analysis

Simulation *(requires known, well estimated, independent probability distributions)*

- Uncertainty over costs, benefits, timescales and impact

Future use - asset stranding

Risk management approaches

Costing approaches to risk avoidance and mitigation

Uncertainty and sensitivity analysis, how should this be dealt with and captured in the CBA?

RIIO ED1 Approach

Guidance published and template produced (*example on next slide*)

- Common framework
- Outlines when CBA required
- Links to business plan
- Clarifies valuation of costs and benefits
- Transparent
- Uses Spackman approach

Is there a need for a common template - one size fits all or project / activity dependant? What about flexibility in approach depending on project?

RIIO ED1

Approach - Example

Parameters

pre-tax WACC	4.2%
Discount Rate <= 30 years	3.5%
Discount Rate > 30 years	3.0%
Discount rate for safety	1.5%
Assumed Asset Life (Years)	45

Prices

Traded carbon price (£/t 2011)	
traded carbon price (£/t 2013)	(tbc)
Losses (£/MWh)	£46.97
CI (£s per interruption)	£0.37
CML (£s per minute lost)	£14.98
VOLL (£m/MWh)	£16,000
Cost per fatality (£m) ²	£1.60
Cost per major injury (£m) ²	£0.02
Cost per litre oil (£/litre)	£35
Electricity GHG conversion factor (tonnes per MWh) ³	0.5898

CBA Option 1 - describe option									
Term (years from first out flow)		NPV (£m)							
16		-£3.83							
24		-£0.98							
32		£2.00							
45		£6.44							
first year of investment out flow		2							
			RIIO-ED1						
			1	2	3	4	5	6	
			2016	2017	2018	2019	2020	2021	
Investment	Reinforcement		£m	(20.00)	(5.00)		-	-	
	Legal & Safety		£m	(10.00)					
	Please specify		£m						
	Please specify		£m						
	Total investment		£m	-	(30.00)	(5.00)	-	-	-
Avoided DNO costs	Please specify		£m		1.00	1.00	1.00	1.00	
	Please specify		£m		4.00	4.00	4.00	4.00	
	Please specify		£m						
	Please specify		£m						
	Please specify		£m						
	Please specify		£m						
Total avoided DNO costs			£m	-	5.00	5.00	5.00	5.00	
Total DNO net benefits before capitalisation (1) = investment + DNO benefits			£m	-	(25.00)	-	5.00	5.00	
Capitalisation rates		(2)	%	50.0%	50.0%	50.0%	50.0%	50.0%	
Capitalised investment		(3)=(1)x(2)	£m	-	(12.50)	-	2.50	2.50	
Investment to be expensed		(4)=(1)-(3)	£m	-	(12.50)	-	2.50	2.50	
Depreciation		(5)=Σ(5) _i	£m	-	-	(0.28)	(0.28)	(0.22)	
Cost of Capital		(6)=avg[(6 ¹),(6 ²)]xWACC	£m	-	(0.26)	(0.52)	(0.46)	(0.23)	
Total Net DMO benefits		(7)=(4)-(5)-(6)	£m	-	(12.76)	(0.80)	1.77	1.94	
Societal benefits (Dm) i.e. costs avoided	Losses		£m	0.42	-	-	-	-	
	CO2e associated with losses		£m	0.04	-	-	-	-	
	CI		£m	0.00	-	-	-	-	
	CML		£m	0.03	-	-	-	-	
	Loss of supply		£m	N/A	-	-	-	-	
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	0.05	-	-	-	-	
	Oil leakage		£m	0.04	0.04	0.04	0.04	0.04	
	Fatality		£m	0.00	0.00	0.00	0.00	0.00	
	Major injury		£m	0.00	-	-	-	-	
	Other 1 (specify)		£m						
	Other 2 (specify)		£m						
	Other 3 (specify)		£m						
Total societal net benefits			£m	0.63	0.04	0.04	0.04	0.04	
Net benefits			£m	0.63	(12.73)	(0.76)	1.80	1.97	
Discount factor		=1/[(1+SRTP) ⁿ]		0.97	0.93	0.90	0.87	0.81	
Discount factor (safety)		=1/[(1+PTPR) ⁿ]		0.99	0.97	0.96	0.94	0.93	
Discounted net benefits			£m	0.61	(11.88)	(0.63)	1.57	1.66	
Cumulative discounted net benefits			£m	0.61	(11.27)	(11.96)	8.88	(8.73)	

AOB?

Next steps

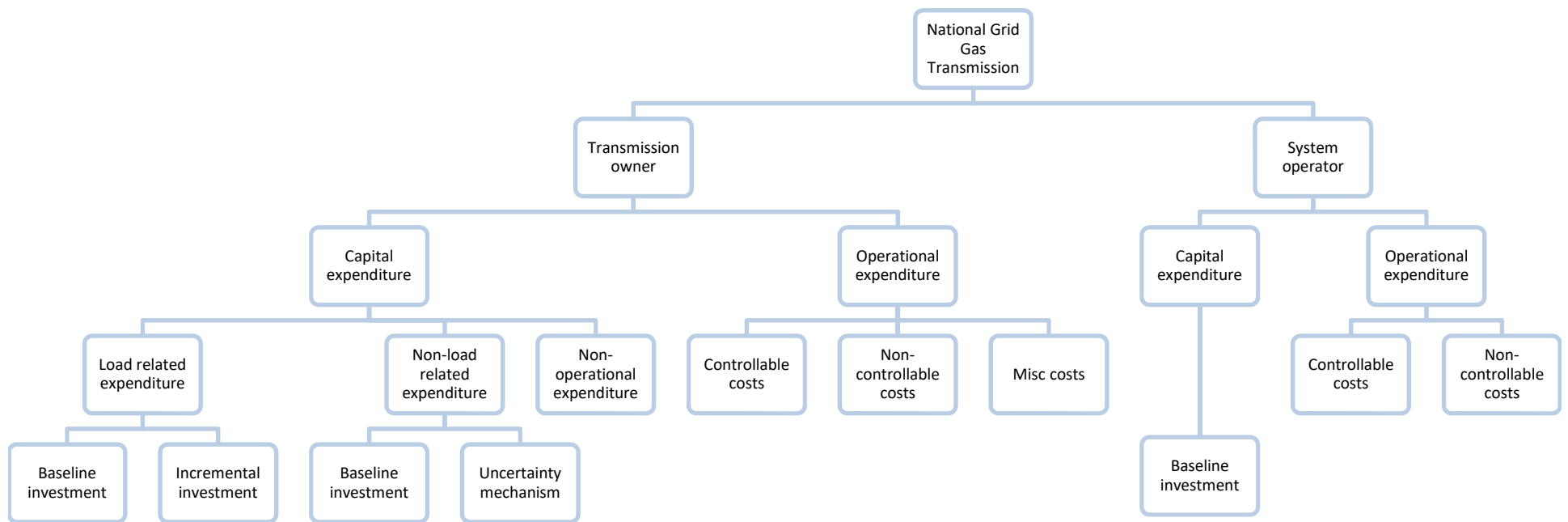
- Resolve outstanding issues
- Clarify next step deliverables
- Final comments
- Next meetings:
 - 12/11/18 – GT policy working group
 - 20/11/18 – GT cost assessment working group

Our core purpose is to ensure that all consumers can get good value and service from the energy market. In support of this we favour market solutions where practical, incentive regulation for monopolies and an approach that seeks to enable innovation and beneficial change whilst protecting consumers.

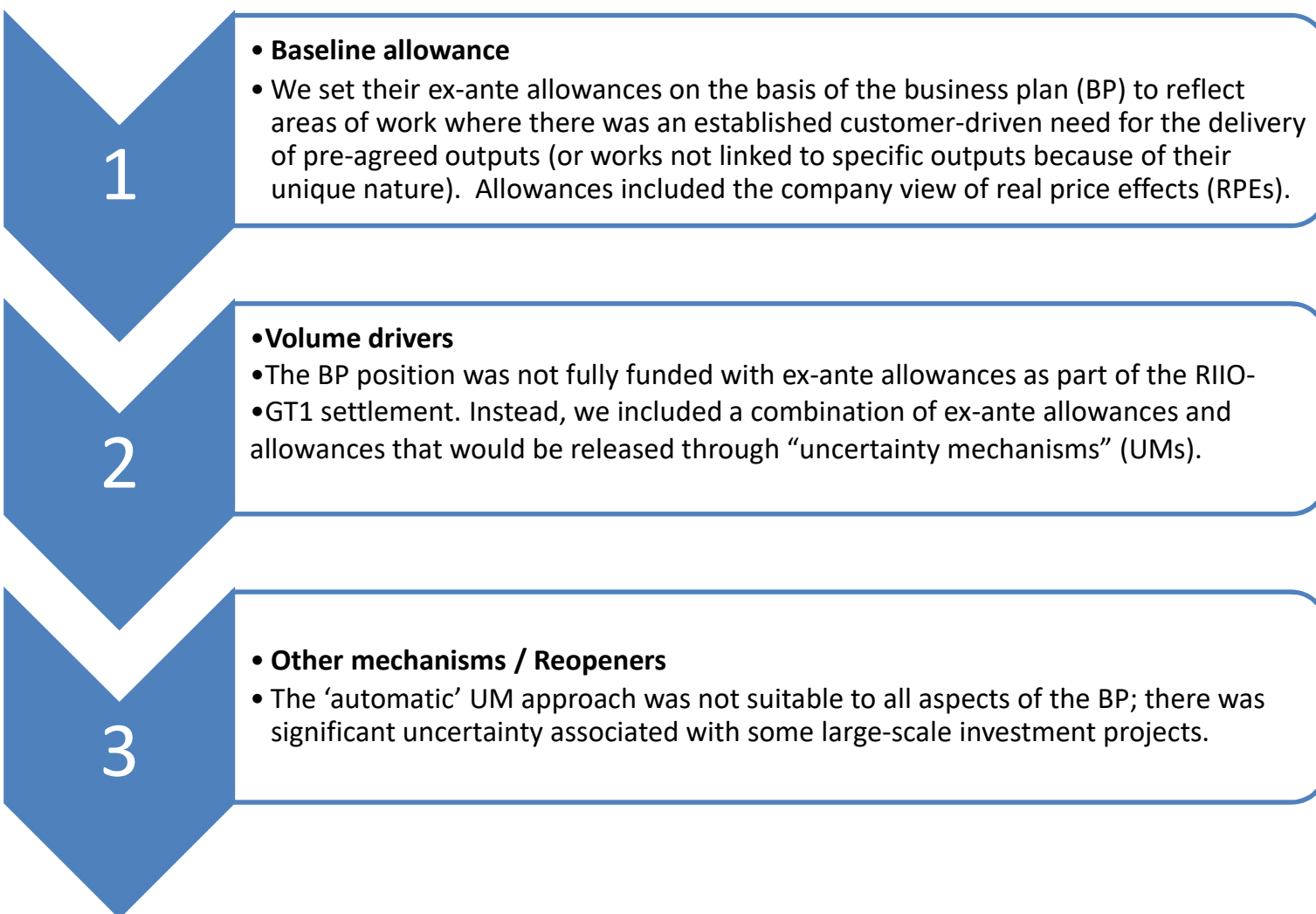
We will ensure that Ofgem will operate as an efficient organisation, driven by skilled and empowered staff, that will act quickly, predictably and effectively in the consumer interest, based on independent and transparent insight into consumers' experiences and the operation of energy systems and markets.

1. What does RIIO-GT1 tell us about the link between costs and outputs?
 - a) How do we capture & embed the achievements of GT1?
 - b) What are the areas where improvements are still needed in GT2?
2. What parts of GT1 in this area are driving value, and what parts are potentially redundant?
3. What new drivers are there in this area for RIIO-GT2, and what should we be expecting NGGT to achieve?
4. What options should be considered for outputs and incentives and what are the specific barriers or enablers required for change?

NGGT TO and SO: Overview

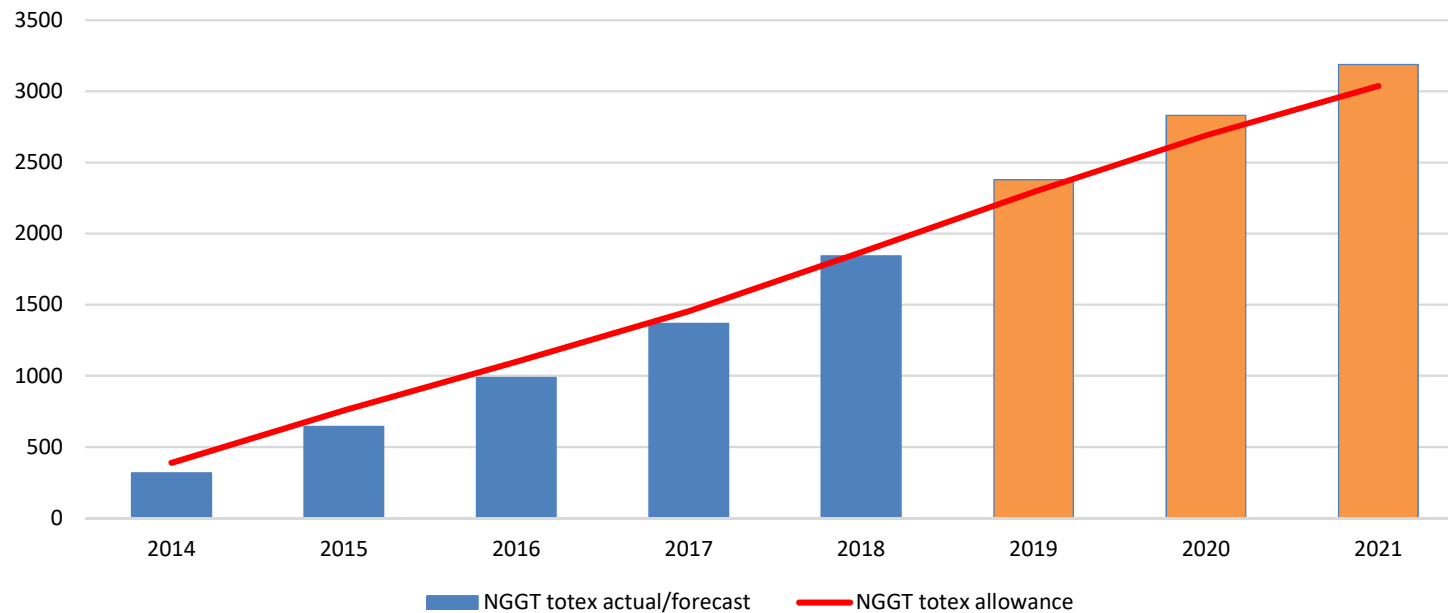


Composition of RII01 cost allowance



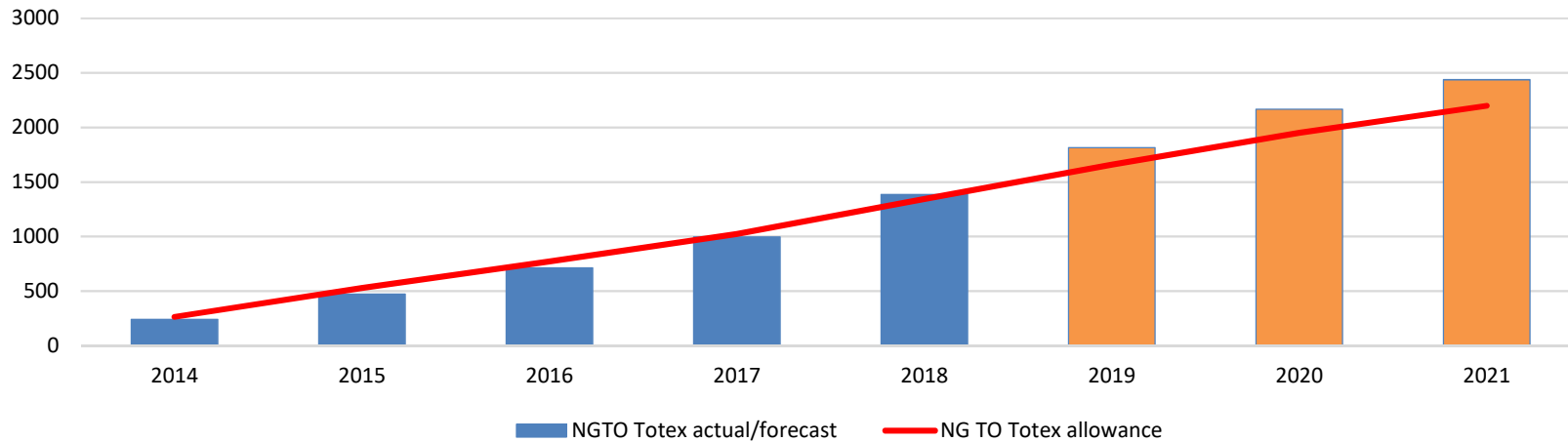
Overall

Across RIIO-T1 the Totex is forecast to be £3.2bn against an allowance of £3.04bn. This results in a forecasted spend above allowances of £151m



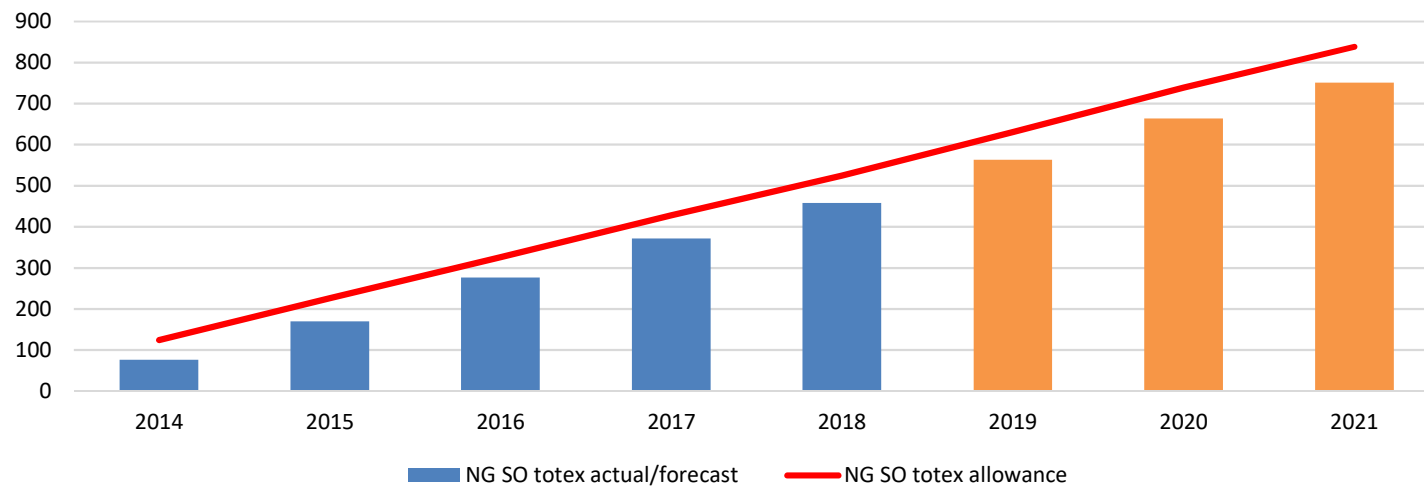
TOs

- Overall total expenditure forecast for the RIIO T1 period is £2.20bn set against forecast allowances of £2.44bn which is an overspend of allowances of (11%).



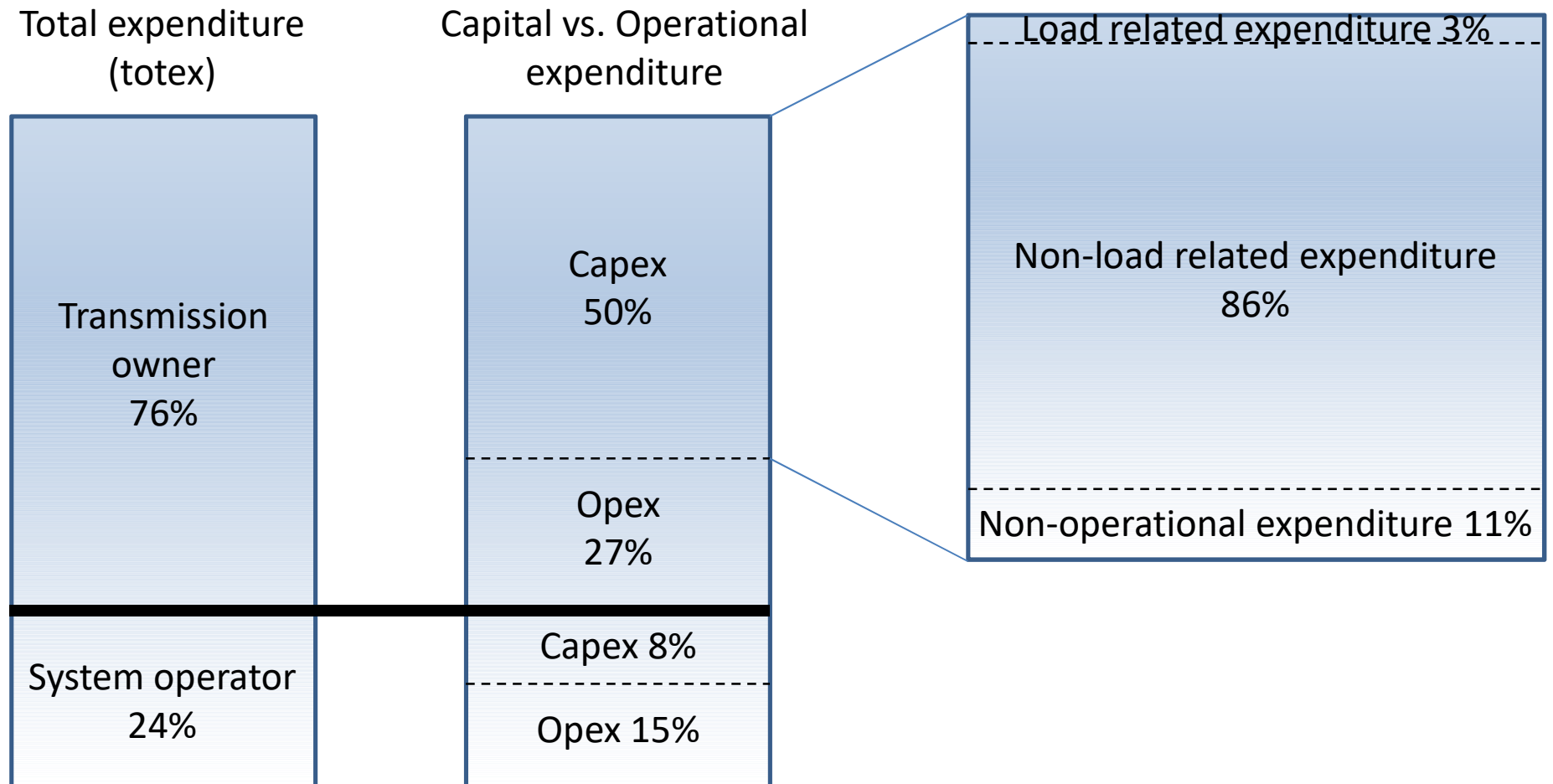
- The forecast Overspend is comprised of:
 - Non - Operational Capex (primarily driven by data and technology upgrades)
 - Closely Associated Indirect
 - Business Support Costs

- Overall total expenditure forecast for the RIIO T1 period is £750.8m set against forecast allowances of £838.2m which is an £87.4m underspend below allowances.



- The forecast underspend is comprised of:
 - Non-operational capex
 - Business support

- Uncertainty mechanisms (reopeners) have provided additional flexibility to address significant uncertainty with some investment projects.
- Overall Stakeholder engagement has improved since start of RII01
- Company is performing against the agreed output targets.
- NGGT in line to deliver network resilience targets (rebasings exercise underway)



Cost name		RIIO-GT1 calculation approach
Baseline	Entry, Exit, Bi-directional	Unit cost assumptions External consultancies, NGG's historical project costs, and internationally available data (e.g. Gas Transmission Benchmarking Initiative, Alaskan compressor stations costings).
	Network flexibility	Project dependent Ex ante allowance for projects that maintain the 1-in-20 obligation: other projects dealt with via uncertainty mechanisms.
	Offtakes	Pass-through (confirmation required) External consultancies and NGG's historical project costs.
Incremental	Entry, Exit, Bi-directional	Uncertainty mechanism: Revenue driver Used to adjust NGG's baseline revenue in response to demand for additional capacity that is backed by a financial user commitment. Calculated upon receipt of relevant signals and based primarily on efficient unit costs for compressor stations and pipeline reinforcement work.
	Network flexibility	Uncertainty mechanism: Options available Majority of investments handled by the uncertainty mechanism as this expenditure is difficult to accurately forecast over the whole RIIO-T1 period.

Cost name		RIIO-GT1 calculation approach
Baseline	Emissions reduction	Unit cost/uncertainty mechanism/cost benefit analysis Liaised with agencies, consultancies, used NGG's historical project costs and international data. Reviewed costs such as compressor units parts, retrofit vs replacement, compliant vs non-compliant gas turbines, technological choices.
	Asset health (condition driven)	Unit cost and benchmarking Engineering consultants assessed forecast expenditure, accompanying justification, underlying costs, and feasibility studies.
	Quasi-capex	Ofgem agreed with NGG's forecast This was anticipated and relates to the disconnection of Feeder 1 as well as for the decommissioning of some secondary assets.
Uncertainty Mechanism	Emissions reduction	As per emissions reduction above Note: non-compliant compressors to be covered by uncertainty mechanism.
	Asset health: Feeder 9	Ex ante and uncertainty mechanism (reopener) Majority of investments handled by uncertainty mechanism as this expenditure is difficult to accurately forecast over the whole RIIO-1 period.
NOE	Non-operational expenditure	IT & telecoms analysis and costing Combination of questioning NGG's forecast, gaining more information, and using consultants as required.

NGGT TO: Cost approach: Opex expenditure

Cost name		RIIO-GT1 calculation approach
Controllable	Direct opex	<p>Engineering consultants: Report and proposals</p> <p>Driven to some extent by age and condition of network and by proposed capex. Overall ongoing efficiency applied to NGGT's forecasts was 1.5%. NGGT are investing in new IT systems in RIIO-T1 and therefore should be able to drive out increased efficiencies above those already identified.</p>
	Indirect opex	<p>Engineering consultants: Report and proposals</p> <p>Largely driven by capital and maintenance support, operational training, operational IT, and gas drawings. Increased the efficiency assumption to 1.5%.</p>
	Business support	<p>Composite cost driver</p> <p>Consultants did a top-down assessment using a composite cost driver. The main costs in business support are data/technology, realigning UK Assurance team to focus on UK work, consultancy/staff costs, and RIIO-T2 prep.</p>
Non-Controllable	Quarry & loss of development	<p>Uncertainty mechanism: Reopener - Ofgem agreed with NGG's forecast</p> <p>NGG would need to demonstrate that not only have they negotiated on respective claims in order to reduce the cost where possible, but that one-off claims also relate to specific project requirements.</p>
	Non-controllable	<p>Ofgem agreed with NGG's forecast</p> <p>Used NGG figures. Ofgem to check if future costs are outside of NGG's control.</p>

Cost name		RIIO-GT1 calculation approach
Capex	Capex (excl. data centre)	<p>Ex ante and uncertainty mechanism</p> <p>External consultancies and open dialogue with NGG to provide clarification on proposed expenditure so that Ofgem fully understands NGG's planned capex.</p>
	Data centre	<p>Ex ante and uncertainty mechanism</p> <p>Consultants/Ofgem: fund £30m baseline investment for refurbishments and data centre upgrades. Further expenditure subject to uncertainty mechanism.</p>
Opex	Controllable (Ctrl)	<p>Engineering consultants: Ex ante and uncertainty mechanism</p> <p>Cost increases due to changing flow patterns and supply dynamics, demand pattern variation, operational changes, headcount growth, and IS projects.</p>
		<p>Engineering consultants: Ex ante and uncertainty mechanism</p> <p>Cost increases due to changing flow patterns and supply dynamics, demand pattern variation, operational changes, headcount growth, and IS projects.</p>
		<p>Composite cost driver</p> <p>Consultants did a top-down assessment using a composite cost driver. Upward cost pressures due to management initiatives and one-off costs.</p>
	Non-Ctrl	<p>Ex ante allowance and uncertainty mechanism</p> <p>Consultants commissioned by Ofgem reviewed the current arrangement. Ofgem providing ex ante allowance with a further review in due course.</p>