Annex
A14.01 Gas On and Off Engagement Log December 2019

As a part of the NGGT Business Plan Submission

nationalgrid

EXECUTIVE SUMMARY

The stakeholder priority ‘I want to take gas on and off the network when and where I want’ is at the core of the National Grid Gas Transmission business. To ensure the gas transmission system is fit for the future, our stakeholders need a gas transmission physical network and commercial framework that work together to deliver their needs. The topics addressed within this stakeholder priority account for approximately half of the RIIO-2 TOTEX contained in our gas transmission business plan submission RIIO-1.

Through our existing RIIO-1 engagement and insight, and more recently, our RIIO-2 engagement activities, the propositions our stakeholders would like us to deliver for both the physical and the commercial aspects include a network that is cost effective, reliable with limited planned disruption facilitating access to an attractive UK gas market; flexible and future proofed.

Our stakeholders recognise that overall our performance to date in delivering their needs has been good in this area. We have adapted the way we operate the network in response to changing demand and supply patterns, we have invested in innovative technology to manage the increasing needs of the ageing asset base and our use of commercial tools minimises constraints and maintenance disruption to our customers.

However, we face a range of challenges which need to be managed within the RIIO-2 framework. These challenges are driven by uncertainty surrounding the future energy landscape (in particular the long-term decarbonisation of heat), potential changes to the commercial framework as well as justifying investments across a range of potential scenarios when planning for the future. To ensure the continued performance in the physical network we need to address our asset health issues on a system with an ageing asset base at the same time as our customers require ever increasing levels of flexibility.

The insight we have gained to date indicates that there is further detailed work we need to undertake with our stakeholders on the trade-off between investment costs, commercial tools and network disruption.

The National Grid future energy scenarios are broadly accepted as the basis for future planning in our RIIO-2 business plan, and stakeholders have indicated costed options where we flex the level of environmental and reliability risk are of interest as part of the next phase of engagement on asset health investment. As part of our next steps we will also engage on and further define the level of service we provide to all our stakeholders.

May 2019 update

This is version 2 of the engagement log, updated to include new insight generated since November 2018 and to address challenges raised through discussion at the Stakeholder Group meeting, SG4. Any new text is coloured purple.

The insight we have gained to date indicates that our stakeholders prioritise and value the current high levels of reliability of the gas transmission network and are very unwilling to see a reduction in service, even if it means higher bills. Similar feedback has also been received on our safety and environmental performance. As part of our next steps we will also engage on and further define the level of service we provide to all our stakeholders through our Network Capability engagement alongside the output from our consumer engagement work streams.

October 2019 update

This is version 3 of the engagement log, updated to include new insight generated since July 2019. Any new text is coloured blue. We have captured the next steps on the level of service we provide also through our network capability engagement which is described in a separate paper. This engagement log should therefore be read in conjunction with our asset health engagement and network capability engagement documents.

December 2019 update

Minor edits only. factual checking and to reflect the final business plan submission.

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QUESTIONS FOR THE STAKEHOLDER GROUP

Pre engagement

Sufficient information provided to stakeholders on which to provide input?

Information presented in an unbiased way?

Is rationale for engagement approach appropriate?

Are the options/questions presented clear and unbiased?

Post engagement

Was the engagement undertaken robust and effective?

Have we demonstrated engaging targeted stakeholders?

Were the outcomes of the engagement clear?

Are the conclusions drawn from the engagement robust?

Do you agree with the conclusions drawn from the engagement?

1. PRE-ENGAGEMENT

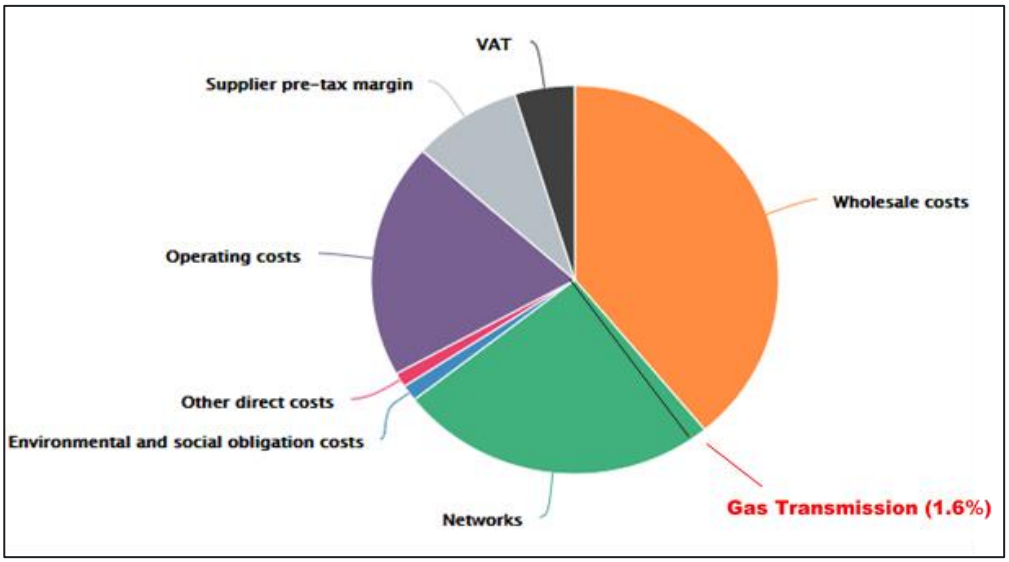
1.1 WHAT IS THE TOPIC AND WHY IS IT BEING ENGAGED ON?

I. ***What is the subject: background and all information (evidence) required to understand what is being engaged on; link to outputs (or incentives)***
II. ***Where are we today/what do we deliver today, and what do we currently understand from stakeholders on future development***
III. ***The industry drivers for this topic***
IV. ***The link to the stakeholder priorities and the scale/materiality of the topics***
V. ***Flag interactions with other topics***
VI. ***Topic prioritisation: materiality vs ease of engagement***
VII. ***Establish boundaries of disclosure for engagement – what is shared, what is not shared, and what is shared after the engagement.***

Consumer Context

Our engagement on this topic has been designed to enable us to understand and articulate the needs of our stakeholders so that we invest in the right gas transmission system, with the right physical assets and commercial framework, at the right cost for our customers and consumers.

The topic directly impacts gas consumers as the costs of operating and maintaining the network underpin gas transportation charges which subsequently flow through to customer charges and the end-consumer bill. In addition, the level of service we provide will have both a direct and indirect impact on our connected customer operations, potentially impacting other elements of consumer energy bills. The investment activities within our RIIO-2 business plan in this area will be one of the more significant influences on the gas transmission portion of the overall consumer bill:



Our expenditure against the stakeholder priority is over 50% of our total TOTEX plan. This is by far the largest spend area, and it is vital that we get our proposals for this right to ensure we deliver the right balance of a physical network and the commercial services that best meet our stakeholder needs now and into the future.

Background and Drivers

The NTS is a complex, variable and interconnected network. A typical transmission system would pump gas in one direction with compressors moving gas stock at a fairly steady rate from a point of supply to a point of demand. The UK gas market however, with over 170 registered gas shippers, is an attractive and highly liquid market, with two-way interconnection to Europe through Bacton, access to UK Continental Shelf (UKCS) and Norwegian gas at St Fergus and Easington and global LNG markets through Isle of Grain and Milford Haven. Hence, we operate a network with gas flowing north to south, east to west and vice versa, gas transiting between other countries and with rapidly changing flow rates within the day.

Key Assets

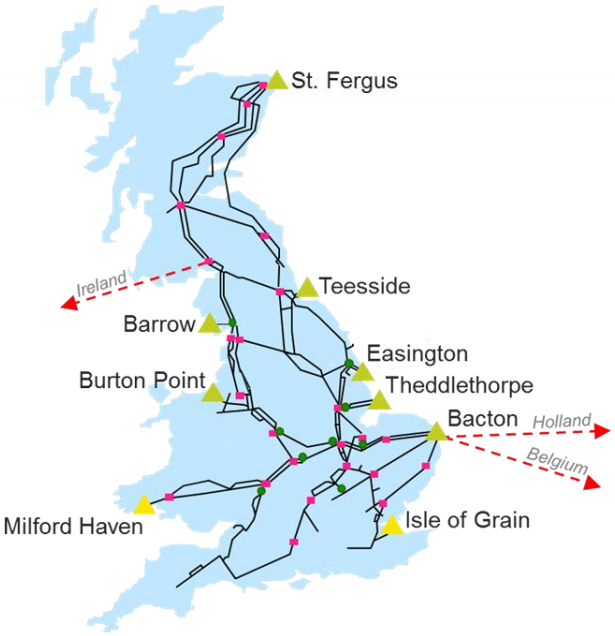
- 7,660km pipeline
- Operating pressure 38 - 94bar
- 23 compressor stations
- Gas National Control Centre (GNCC)
- 600+ Above Ground Installations

Entry Points

- Beach Reception Terminals (7)
- LNG Importation Terminals (2)
- Interconnectors (2)
- Storage sites (8)

Exit Points

- Distribution Offtakes (121)
- Power Station (48)
- Large Industrial (21)
- Storage (8)
- Interconnectors (2)



Through our RIIO-1 stakeholder engagement and our Listen phase of the RIIO-2 stakeholder engagement we have clearly heard that stakeholders want to be able to put gas on and off the NTS, where and when they want. We have been able to manage this on a broadly unconstrained basis for many years, typically with only a small number of disruptions of a few hours duration each year. To do this we use a combination of tools available to manage the physical configuration of the NTS, such as the use of compressor reconfiguration, asset investments and maintenance planning and alignment in conjunction with customers. We also use commercial tools such as undertaking locational actions to buy or sell gas and are incentivised through specific mechanisms to minimise disruption through operational interventions (see Appendix 6.4).

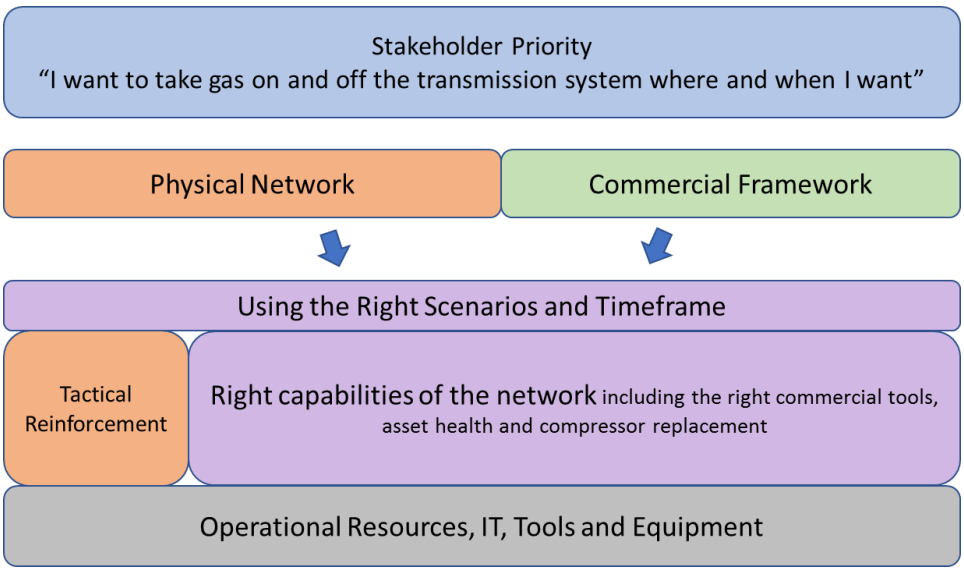
As we develop our business plan for RIIO-2, the future challenges are broadly two-fold: we need to maintain the health of the network such that we minimise disruption for our stakeholders and continue to provide the maximum value from the services we provide and the assets that we have. With uncertainty around the shape of the energy landscape into the future, the exact pathway for gas transmission remains undefined. So, whilst we are unlikely to be expanding the network duty under RIIO-2, we have heard from our stakeholders they will continue to expect and value flexibility from the network and the services we provide. From this insight, we believe there is value to our stakeholders if we ensure we keep our options open for an uncertain future.

There is a cost associated with keeping our assets running, and therefore, we need to test the extent to which our stakeholders want us to continue along to provide a broadly unconstrained service. To do this, we

need to understand the impact of constraints on stakeholders, to determine what elements of the services we provide are most important and why, and explore opportunities to do things differently, including potentially new commercial services. The insight from this engagement will then inform the options we put forward in our business plan.

Link to Stakeholder Priorities and interactions with other Topics

The stakeholder priority "I want to take gas on and off the transmission system where and when I want" is a very broad subject with a number of topics which form the building blocks for this stakeholder priority. The way we optimise our business plan across all these areas is a key consideration as we move forward with our stakeholder engagement.



There are three distinct topics on which we have engaged with stakeholders, plus a number of other expenditure areas which underpin the running of the NTS, but which haven't yet been subject to direct challenge from our stakeholders.

Topics for stakeholder engagement (~80% of total expenditure on this priority)

- Delivering the right capabilities of the network including asset health investment
- Using the right scenarios to build our business plan [1]
- Tactical Reinforcement, which is network reinforcement in response to customer specific issues)

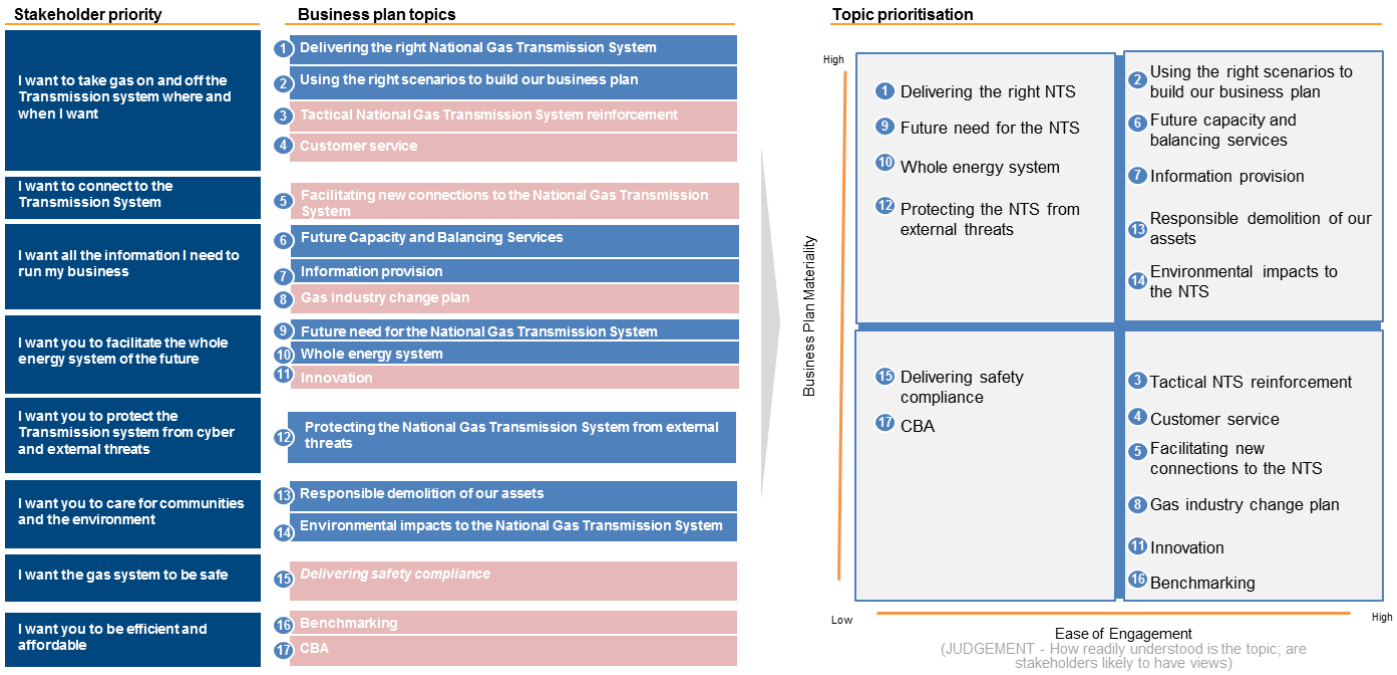
Other areas of expenditure (~20% of total expenditure on this priority)

- Operational resources (e.g. the field force)
- Operational IT and telecommunications (e.g. control room systems)
- Tools, equipment and vehicles
- Asset systems

These other areas of expenditure will be subject to scrutiny through the Stakeholder Group and included in our business plan consultation.

[1] Note, since starting our engagement, Ofgem has indicated that the RIIO-2 challenge group has requested that the energy industry use a single scenario for planning. We are contributing to this process but stakeholders have commented to Ofgem and to us that we should use a wide range of scenarios as part of our business planning process.

The importance of this topic to our stakeholders, and the materiality within our business plan, mean that this is a key area of relevance for engagement with our stakeholders. At the Stakeholder Group meeting 2 the topics 'Delivering the right National Gas Transmission System' and 'Using the right scenarios to build our business plan' were classified as having a high materiality and therefore deemed relevant for discussion at the Stakeholder Group, as demonstrated by the following matrix:



Given the breadth and complexity of this topics, this engagement log is one of two parts and will be presented at both the November and February stakeholder group meetings.

1.2 What existing insight has been utilised?

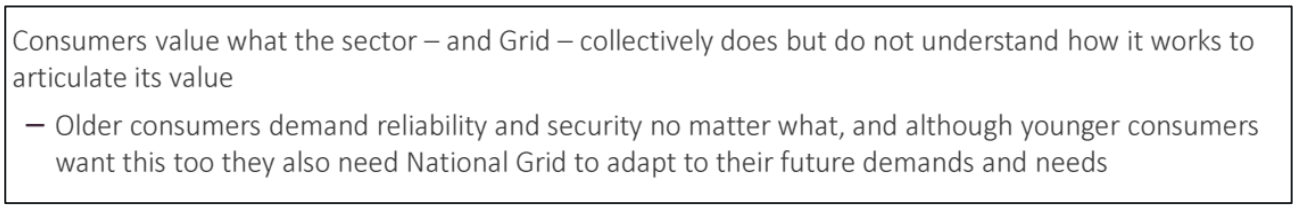
I. *What existing insight has been drawn upon; BAU engagement, satisfaction survey insight, FES horizon scanning; output from listen phase*
II. *What are the gaps in existing insight you wish to fill from this engagement? (Stakeholders not previously engaged or no existing insight exists)*

Given the fact that this topic is fundamental to our role and the day to day activities we undertake, there is a wide range of business as usual stakeholder engagement we can draw on to inform our RIIO-2 business plan and this can be enhanced further by additional specific engagement activities. The current engagement ranges from our regular interaction with connected customers to annual events and participation in cross industry working groups. A short overview on the following eight topics is provided below:

Existing Engagement Activities	Stakeholder Segments Engaged
Direct Consumer Engagement Project	Regulatory, Government and Political, Consumer Bodies
Future Energy Scenarios (FES)	Regulatory, Government and Political, Customers – connected, Customers-shippers, Consumer bodies, Interest Groups, Think tanks, Academics and Innovators, Network Companies, Other
Gas Future Operability Planning (GFOP)	Regulatory, Customers – connected, Customers-shippers, Network Companies
GB Gas Market Measures	Regulatory, Government and Political, Other, Customers-shippers
Industrial Emissions Costs Reopener	Regulatory, Customers – connected, Customers-shippers, Consumer Bodies, Interest Groups, Think tanks, Academics and Innovators, Network Companies, Other
Innovation	Regulatory, Think tanks, Academics and Innovators, Network Companies, Other
Operational Liaison	Customers – connected, Network Companies
Network Output Measures methodology consultation	Regulatory, Network Companies
ENA groups	Network Companies

Direct Consumer Engagement Project

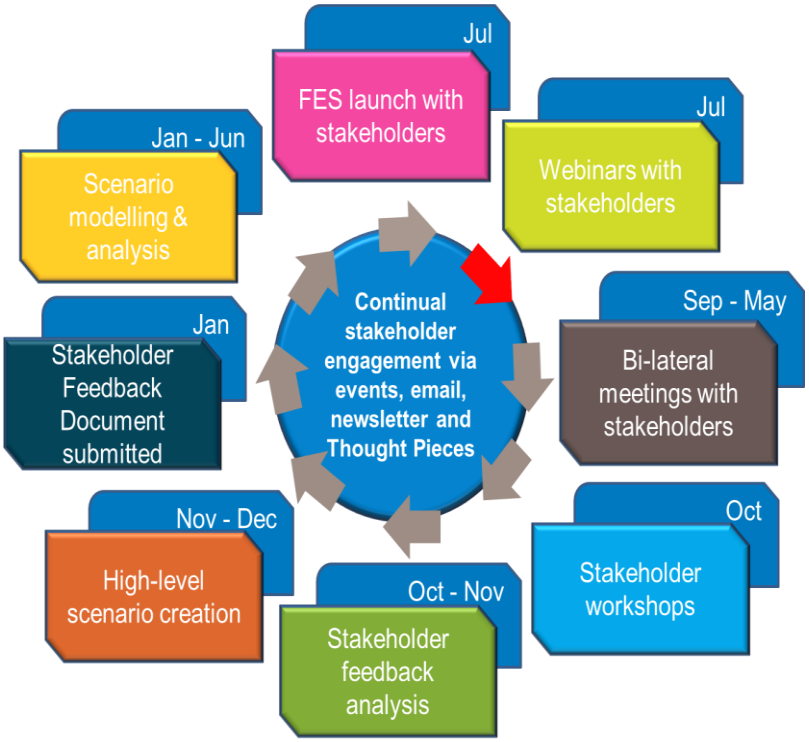
In 2017, we commissioned a report through Populus ('National Grid's reputation and influence') which gave some useful insight into the views of specific stakeholder segments (domestic consumers and political), on the need to maintain as high a level of reliability as we have historically provided and the need to move and adapt to changing needs of our future customers in particular.


Consumers value what the sector – and Grid – collectively does but do not understand how it works to articulate its value

– Older consumers demand reliability and security no matter what, and although younger consumers want this too they also need National Grid to adapt to their future demands and needs

Future Energy Scenarios (FES)

Our Future Energy Scenarios (FES) represent transparent, holistic paths through the uncertain energy landscape to help our stakeholders make informed decisions. These scenarios are not forecasts, instead they show a range of plausible and credible pathways for the future of energy, from today out to 2050. As well as detailed network analysis, the annual development of FES includes extensive stakeholder consultation. The engagement this year involved over 650 stakeholders, 430 organisations, webinars on a range of subjects, workshops across four locations as well as thought pieces and newsletters to a mailing list of 7,400. The process of developing FES is undertaken each year alongside our Gas Ten Year Statement. This is also shared with stakeholders annually. As well as the application of the scenarios themselves, the feedback gathered as part of the FES engagement is an essential element of stakeholder insight that will continue to inform our RIIO-2 business plan.



In addition to our use of FES, Ofgem's Challenge Group have recently requested that all network companies agree the use of a single scenario to develop their business plans. We are working with the other networks to agree the scenario and this will be presented to the Challenge Group by all networks on the 29th November 2018. The final output from this work was provided to the Challenge Group on Common RIIO2 Scenario in March 2019. A short overview of the key variables is provided in the table below. This Common View of the Future brings out the key drivers that could affect networks business plans. The supply and demand ranges from this work for each of the gas transmission drivers is presented in the table below. This can be compared to the upper and lower range of FES by 2030.

Category	Key Drivers	Sub Elements	Majority view	Majority view	2017 reference	FES 2030 lower end	FES 2030 upper end	Cross sector impact/interactivity with other areas
Supply	Shale Reserves (supply from)		Medium	5-15bcm	0	0	32bcm	Alignment with Gas Distribution
Supply	Norwegian gas extraction		Medium	17-29 bcm	35bcm	17bcm	32bcm	
Supply	Low carbon gas		Low	0.8 to 1.8bcm	0.25bcm	0.3bcm	2.2bcm	Alignment with Gas Distribution
Demand	Gas vehicles	CNG, LNG	Medium	48,000 to 104,000 vehicles	1k	50k	100k	Alignment with Gas Distribution
Demand	Unabated gas	CCGT, OCGT, CHP	High	20-32GWh	35GW	31GW	43GW	Alignment with Electricity Transmission and Distribution
Demand	Gas 1 in 20 peak day demand		New not previously captured	5000GWh	5500GWh	3993GWh	5092GWh	Interaction across Gas Distribution and Transmission

Gas Future Operability Planning (GFOP)

The Gas Future Operability Planning (GFOP) document is published by National Grid in our capacity as Great Britain's System Operator and through which we aim to

- Assess a range of views of the future through the lens of National Grid's Future Energy Scenarios

- Act as a vehicle for all market participants to discuss and quantify their future gas transmission network needs
- Describe the operability challenges we could see in the future
- Set a clear direction for the development of commercial options (rules), operational arrangements (tools) and physical investments (assets) to ensure we continue to deliver.

The GFOP allows stakeholders to challenge our assumptions about future uncertainties, share what they want from the gas transmission network and collaborate with us to better understand the operational risk posed to the wider energy system and develop new and innovative solutions. The regular interaction with our stakeholders enables us to identify solutions that balance all stakeholder priorities. The GFOP is published every quarter and each publication has four phases of engagement which includes bespoke meetings, webinars and workshops as well as a release of an Operability Insight piece on our website.

Each publication is directed at a different stakeholder group therefore the mode of engagement differs. Our February 2018 publication had one stakeholder group meeting and one webinar with 89 participants; while June publication generated five different stakeholder group meetings. The next document in November 2018 will be focused on supply challenges in the South East, so this targets a specific stakeholder group and the mode of engagement will be bespoke meetings and one webinar. Overall there is a mailing list of 2,400 who receive our publications and operability insight pieces and there were almost 800 publication downloads in June 2018. Traffic to our webpage for information has seen an increase of 600% this year.

GB Gas Market Measures

The GB gas market has a diverse mix of supplies facilitating both security of supply and flexibility. The gas market commercial framework forms the foundation to facilitate a high degree of gas trading liquidity where no one party has sufficient influence to dictate market prices.

> "Buyers and sellers can trade easily and with confidence that prices, which are around the European average, reflect underlying supply and demand." – Ofgem State of the Energy Market 2018 Report

This gas supply diversity provides significant market flexibility to manage events such as the 'Beast from the East' cold weather period earlier this year. On 1st March 2018, National Grid issued a Gas Deficit Warning for the first time since six Gas Balancing Alerts in 2010, and supplies responded and balanced on days when gas demand was above 400 million cubic metre per day (our seasonal demand in FES ranges from just below 200 to just over 400 million cubic metre per day).

The liquidity of the market can be measured by the churn ratios – the number of times a unit of gas is traded before it is delivered to the end consumer. The GB gas market churn ratio averaged 23 during 2017 indicating a high level of market trading activity supporting an efficient outcome for consumers. This compares to a GB electricity market churn of 4, and with the exception of the Dutch gas trading hub, TTF, all other European gas trading hubs have a churn ratio below 10.

As the gas wholesale costs are the largest single component of consumer bills, market operation has a significant impact on consumer bills. The current framework of outputs and incentives influence market prices and market participants; impacting on sources of supply, market concentration and liquidity in a highly positive manner.

Industrial Emissions Costs Reopener

A core element of our RIIO-1 investment was associated with investment in our compressor fleet as a result of emissions related legislation, including the Industrial Emissions Directive, IED. Environmental legislation has been developed over recent years introducing new standards to minimise the impact of industrial activities on the environment and human health. National Grid's gas turbine driven compressors are impacted by the legislation as a result of limits on emissions of nitrogen oxide (NOx) and carbon monoxide (CO) to the environment from the combustion of natural gas. The framework stipulated that funding for the nine units impacted during RIIO-1 would be through an Uncertainty Mechanism – Licence Condition 5E.1 for Industrial Emissions Costs, with submission to Ofgem possible in either May 2015 or May 2018.

As part of the May 2015 reopener window we undertook a range of stakeholder engagement which culminated in stakeholders broadly agreeing with our recommendations which ultimately formed the basis for our IED reopener submission that year (fully described in Appendix 6.2). Ofgem did not accept our proposals and whilst positive about the stakeholder engagement process we had undertaken asked for the submission to be resubmitted in May 2018 with further work on costed options. In preparation for the May 2018 reopener we looked to build on the positive response from our 2015 stakeholder engagement, developing the factors stakeholders consider important with a robust Cost Benefit Analysis (CBA) methodology for the options presented. We held three workshops in London, Edinburgh and Warwick in October 2017. These events attended by a range of stakeholders, have re-introduced the background to the legislation and provided an updated view on the impact on the compressor fleet. These workshops have also provided insight into the most effective way to continue stakeholder engagement in this second phase. However, a key message from stakeholders was that views shared in the May 2015 reopener process are still very relevant and the themes identified are still appropriate. We then went on to conduct several bi–lateral meetings with interested parties and incorporated their views in two further presentations at the Transmission Working Group, sharing the analysis and taking questions from stakeholders.

A formal consultation was launched on 14th March 2018 with a stakeholder document containing a description of the options assessment for each site and was made available on our website and advertised through the Energy Networks Association. The consultation contained 12 questions, and four responses were received, two by written responses and two by online survey. We received informal feedback from some shippers that they were unable to respond to our consultation due to the workload associated with other consultations. They told us that their feedback from the 2015 consultation – that flexibility in the network is important and should be maintained at a reasonable cost – was still valid, and indicated an intention to respond to subsequent consultations carried out by Ofgem. Having submitted our proposals to Ofgem in May 2018, Ofgem conducted an informal consultation which was open until the 20th June 2018 and then a formal consultation after issuing their minded to position between 8th-29th August 2018. This consultation received three responses from Energy UK, Centrica and Citizens' Advice. Energy UK commented that they were "broadly supportive of NG's proposals whilst we accept that further costs and technical challenge provided by the consultants' reports is valuable in informing Ofgem's position we also consider that stakeholders' views should not be put aside at this time". Centrica agreed with Ofgem's minded to position not to allow National Grid any additional revenue. Citizens' Advice had concerns around the reopener process, indicating "overall concerns regarding the process used by Ofgem ahead of the recent funding decisions" and "Ofgem should prioritise their decision on the needs case for upgrades to these sites. Waiting until the RIIO-T2 price control to do this may not promote the most efficient management of the pipeline system". In addition to these responses not giving a consensus view, we responded to say that National Grid had worked with stakeholders and the environmental regulators to

reduce the cost to consumers of environmental compliance and we had addressed all of Ofgem's concerns from the May 2015 reopener. However, at the conclusion of the process in September 2018, our proposals were not accepted. Ofgem have agreed to review the needs case of St Fergus and Hatton compressors in 2019 so that early works can proceed in RIIO-1.

National Grid expressed the view in their response to the consultation that this reopener has introduced further regulatory uncertainty and the inconsistency of approach will undermine our ability to fund the programme of works in an efficient and effective manner. The IED legislation will impact a number of other units in RIIO-2 and beyond out to 2030 and we will therefore develop our investment proposals for these other units as part of our RIIO-2 business plan, in conjunction with the further work we are doing with Ofgem to address their issues raised during the May 2018 reopener.

Innovation

Throughout our existing innovation programme we have collected insight from a range of stakeholders. Our innovation programme has focussed on delivering value across a number of themes such as reliability, maintenance and safety, all of which link into this stakeholder priority.

Innovation projects with higher value or strategic importance, such as Project GRAID, developing a high pressure robotic inspection tool, have included a significant element of stakeholder engagement. For Project GRAID, in addition to regular consultation with Ofgem, three separate stakeholder events have been held, giving us the opportunity to invite and engage with the Gas Distribution Networks, along with one of our customers, Perenco to witness demonstrations of the GRAID robot. We have issued a regular newsletter which now has over 2000 subscribers and frequently feature articles on the National Grid website and LinkedIn. We have exhibited and presented at a number of conferences including:

- World Gas Conference
- Pipeline Pigging and Integrity Management
- Utility Week
- International Pipeline Conference

These events provide useful insight into how our work fits within global development of robotic technology in our sector.

More generally, we issue an annual call for ideas via the National Grid website and the Energy Networks Association (ENA) for bids into the Network Innovation Competition (NIC), receiving 24 bids from third parties last year. We are a key player in the ENA gas transmission and distribution innovation – the Gas Innovation Governance Group (GIGG) – which ensures we continually share learning and ideas with the other gas networks on a range of technical and governance issues. Our work with GIGG resulted in a joint Gas Innovation Strategy published earlier this year. The annual Low Carbon Networks and Innovation (LCNI) conference is an innovation focussed conference attended by all networks, gas, electricity, transmission and distribution. Typically attracting up to 1000 attendees we use this event, not only to get feedback from stakeholders on projects we are undertaking but also as an opportunity to gather new ideas from potential suppliers and other networks and third parties.

Operational Liaison

Our business as usual engagement on operational activity is carried out primarily through two work streams. Firstly, we hold operational forums seven or eight times per year in London. These provide visibility and

awareness to our stakeholders and enable discussion on the operation and performance of the NTS. The forums are open to all of the gas industry, although predominantly attended by shippers and we ask for topics of interest to discuss in advance. Secondly, we arrange liaison visits with individual sub terminal and storage sites to discuss any operational issues, and their day-to day interaction with the Gas System Operator (GSO). We meet each site once per year, and alternate the location each year, either in Warwick, or at their site. Other engagement is more ad-hoc e.g. a customer or stakeholder might request to meet us to discuss particular topics or issues related to gas operations.

We are currently planning a few changes to our approach, including setting up a working group for enhancements to the operational data we provide to industry over the next few months and looking at ways to expand our engagement, particularly with the directly connected power stations and industrial sites. We have more informal conversations with these types of sites, for example on maintenance, but don't currently have the same structured engagement as for terminals and storage sites. We will look to put measures in place to identify stakeholder requirements and enhance their experience.

The feedback and insight varies depending on customer types. However, as an example of the action we take, last year we received feedback that query response time in gas operations could be slow, so we now measure query response time across the department and monitor as part of our regular departmental meetings to deliver improvement. We have also been told with regular staff changes it can be difficult to know who to speak to, so we introduced a query contact list for issue resolution on the website, with one team acting as an escalation point for any queries not resolved in a timely manner.

Network Output Measures (NOMs)

As well as this broader insight, other key material generated from our RIIO-1 engagement is one of the main components of the RIIO-1 framework, Network Output Measures (NOMs). NOMs are mechanisms to monitor and assess the network asset condition, risk and replacement outcomes that network companies deliver. The NOMs replacement outputs are specified in the gas transmission licence under Special Licence Conditions 7D and 7E.

The key principle of the NOMs methodology is that despite the differences and variation in the assets of the networks companies in the four sectors (gas, electricity, transmission and distribution), risks associated with the asset failure can be monetised and measured in a common framework by combining the probability of causing disruptions and the associated impact. The reduction in risk resulting from maintenance or other asset management interventions can also be measured and used to drive asset management investment decisions. This monetised risk approach means that ideally gas transmission performance can be assessed consistently against other network companies. Through the NOMs Cross Sector Working Group (NCSWG), Ofgem has consulted with industry on the proposed framework which will give clarity on how targets will be set, measured and incentivised at the closeout of RIIO-1 and will form the basis for asset health outputs set for RIIO-2. We also undertook extensive stakeholder engagement in March 2018 with a number of one to one meetings and webinars.

Stakeholder	Engagement	Date
Citizens' Advice	Webinar	January and March 2018
Environment Agency and Scottish Environmental Protection Agency	Webinar	March 2018
Gas Distribution Networks	Meeting	May 2018
Distribution Network Operators	Webinar	March 2018
Health and Safety Executive	Meeting	January 2018

National Grid Electricity Transmission Owner	Meeting	March 2018

We also undertook a public consultation on a range of aspects of the methodology described in the following table:

Summary Document	A high level overview of the proposed NGGT Network Output Measures reporting Methodology
Main Methodology Document	A detailed account of the methodology Outlines the Monetised Risk model for our Pipelines and Site assets. Introduces the concepts of: - Probability of Failure - Consequence of Failure - Service Risk Explains the principles of future NOMs reporting and governance of the new NOMs Methodology. Explains how the principles of Monetised Risk will be used to plan and optimise our RIIO-GT2 investment plan.
Probability of Failure Supporting Document	Gives greater detail as to how the Probability of Failure is estimated for Pipelines and Sites assets. Explains the reference sources and assumptions required to estimate the probability of asset failure, both now and in the future. Documents the key assumptions applied.
Consequence of Failure Supporting Document	Gives greater detail as to how the Consequence of Failure is estimated for Pipelines and Sites assets. Explains the reference sources and assumptions required to estimate the consequences of asset failure, both now and in the future. Documents the key assumptions applied.
Service Risk Framework Supporting Document	Documents the key assumptions applied.
Outputs of our engagement to date	Summary of the questions and answers from our engagement with stakeholders.

A total of three responses were received from Citizens' Advice, Npower and Centrica. during the public consultation which provided both supporting commentary and useful recommendations with example quotes provided below.

Citizens' Advice - ***"Overall, we judge the proposed updates to the Methodology to be a clear move in the right direction and we look forward to seeing how NGGT's work on this topic evolves."***

Npower - ***"We understand that "risk monetisation can be used to identify the most cost beneficial interventions." And that the measurement of monetised risk can be used to show what value investment can give, but we do not see how this information is used to demonstrate the best outcome has been achieved. We understand that targets should be agreed with Ofgem and the onus is on Ofgem to monitor this."***

Centrica - ***"In the consultation, aspects of the Methodology and its application have been identified that require further work ahead of the RIIO-GT2 price control. We recommend efforts are focussed on ensuring the Methodology is wholly fit-for-purpose for developing the business plan for and undertaking network investment during the RIIO-GT2 price control."***

Further detail on NOMs is provided in Appendix 6.1

ENA Groups

A key element of our engagement with the gas distribution networks as part of our business as usual activities is through a number of groups run by the Energy Networks Association (ENA). Membership of the

ENA is open to all owners and operators of energy networks in the UK; multiple and individual licence holders. There are also associate members - companies who operate smaller networks or are licence holders outside of mainland Britain or Ireland. The various regular forums and meetings enable us to engage and collaborate on cross sector issues such as regulatory frameworks, future innovation. The key meetings for Gas Transmission being the Gas Regulation Group (GRG), the Gas Innovation Governance Group (GIGG) and the Gas Futures Group (GFG).

1.3 WHAT ARE THE DESIRED OUTCOMES FOR THIS ENGAGEMENT?

I. *What are the desired outcomes from this engagement? (incl. where you most need to engage)*
II. *What are the measures of success?*
III. *What are the questions being asked from engagement? Have they been reviewed to be transparent and unbiased?*

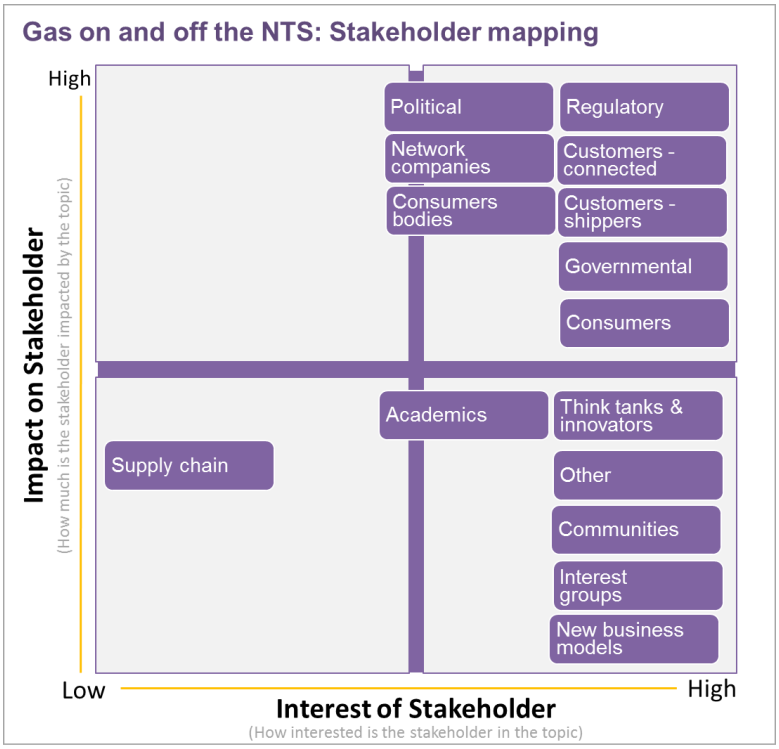
Following our Listen phase, our initial steps in developing our work under this stakeholder priority were designed to help us understand what stakeholders want from the network and what the impact of network disruption is on their businesses. The second phase of engagement, which we are currently undertaking moves onto defining appropriate possible outputs for National Grid to deliver to meet the needs identified in the first phase. This second phase will also develop our engagement activities on potential market tools. Finally, we will explore different costed options with our stakeholders. These would be both physical and commercial options whereby stakeholders could provide feedback on how different options, and different trade-offs would impact on their businesses.

Desired outcomes of engagement
The desired outcome of this engagement is to understand what is the right gas transmission network, with the associated commercial framework to meet our stakeholders' needs and at what price.

From our existing interactions, we understand that stakeholders value the unconstrained characteristics of the current network and commercial framework. We wanted to develop additional, and more detailed insight into whether different stakeholders are impacted more significantly by disruption and how this differs for planned and unplanned events. This formed the basis for the questions we asked.

In the early stages of the engagement we looked to engage with a wide selection of stakeholders across a number of stakeholder segments, with more focused engagement underway currently.

Stakeholder Mapping
The matrix below shows our assessment of key stakeholder groups impact and interest with the table below providing the detail of specific groups which we have attributed to each category for the purpose of this topic. The key stakeholders for this topic are the top right quadrant of the matrix below. They are characterised as having high impact and interests.



Priority Stakeholder Segment	Description	Example Organisations	Involvement in existing engagement
Regulatory	Energy, safety and environmental regulators	Ofgem, HSE	Direct Consumer Engagement Project, FES, Gas Future Operability Planning (GFOP), GB Gas Market Measures, Industrial Emissions Costs Reopener, Innovation, Network Output Measures methodology consultation
Governmental and Political	Elected officials and advisors including Westminster, Scotland and Wales Civil service and committees including BEIS	BEIS, devolved administrations, other non-energy government departments	FES, GB Gas Market Measures, Direct Consumer Engagement Project
Customers-connected	Customers connected to the NTS that put gas on and take gas off the network.	Gas storage, terminal and interconnector operators	Industrial Emissions Costs Reopener, Operational Liaison. FES, Gas Future Operability Planning (GFOP)
Customers-shippers	Customers that buy and sell gas	Active shippers	Industrial Emissions Costs Reopener, FES, GB Gas Market Measures, Gas Future Operability Planning (GFOP)
Consumer Bodies	Representatives that protect the interest of consumers	Citizens' Advice	Industrial Emissions Costs Reopener, FES, Direct Consumer Engagement Project

Network Companies	Other regulated network companies including distribution networks	Gas Distributions Networks, Electricity Distribution Operators, Electricity Transmission Owner and Electricity Transmission System Operators	ENA groups, Innovation, Network Output Measures methodology, FES, Gas Future Operability Planning (GFOP)
Interest Groups	Groups representing specialist interests including environment	Oil and Gas UK, Energy UK, MEUC, EIUG, Ceramics	Industrial Emissions Costs Reopener, FES

To help with the planning our RIIO-2 engagement, based on our existing insight and stakeholder engagement within the RIIO T1 period we describe some of the interest areas for a number of stakeholders within the segments which is presented below:

Stakeholder segment: Organisation	Interest area	Why
Network Companies: Gas Distribution Networks	Security of supply (1 in 20) Level of flexibility available Impact on charges	Want a secure network Want to minimise their own costs
Customers: Shippers	System flexibility Our ability to accept/deliver their gas Level of charges	Want to maximise choice on where to bring gas on to the system Want to minimise their own costs
Interest Groups: [redacted]	System flexibility Level of charges	Want to maximise choice on where to bring gas on to the system Want to minimise their own costs
Customers- Connected: Producers [redacted]	Competitive tariffs Access to capacity	Want to maximise choice on where to bring gas on to the system
Consumers: Domestic consumers	Impact on charges Reliability	Want a reliable gas supply and bills to be as low as possible
Consumers: Industrial	Impact on charges Reliability	Want a reliable gas supply and bills to be as low as possible
Consumers: Future consumers	Impact on charges Reliability	Want a reliable gas supply and bills to be as low as possible
Customers- Connected: Direct connects	Consistency/level of pressures on the network Level of charges	Want to minimum impact on their operation Want to minimise their own costs
Customers- Connected: Terminals	Level of entry constraints Gas quality specification and blending	Want minimum impact on their operation
Interest Groups: [redacted]	Level of entry constraints	Want to maximise choice on where to bring gas on to the system
Governmental: [redacted]	Security of supply	Want confidence that the gas network is robust
Customers- Connected: Suppliers	Level of entry constraints	Want to maximise choice on where to bring gas on to the system
Customers- Connected: Storage operators	Our ability to accept/deliver their gas Level of charges Commercial opportunities for storage services	Want minimum impact on their operation Want to minimise their own costs/maximise revenue opportunities

Engagement questions to be asked

Having identified these topics as stakeholder priorities, we evaluated the existing insight and developed a number of pertinent questions across the four topics areas. In addition, having given a topic overview at the start of each engagement session we asked one overarching question each time:

> ***'On a scale of 1 to 5, where 1 is not impacted at all and 5 is impacted a great deal, how impacted are you (or those you represent) by what we've just spoken about?'***

The topic specific questions are as follows:

'Delivering the right NTS'

1. If you can't put your gas on or take your gas off when and where you want, what processes are impacted?
2. What are the different impacts?
3. Under current market conditions, what level of disruption would be acceptable to your business?
4. Out of all the services we provide, which aspects could we improve to make your processes more efficient or deliver more value to your business?

'Asset Health'

We provided stakeholders with a list of nine options based on our findings during the 'Listen' phase of our engagement. Three of the options were 'default options' which we would automatically look to cost (1) ***Keep costs the same for consumers as RIIO-1*** (2) ***Keep risk the same*** (3) ***Lowest whole lifecycle cost***. There were also six other options which would flex the level of safety, reliability and environmental risk by +/- 10% e.g. 10% increase in safety risk, 10% reduction in environmental risk etc. We then asked three questions:

1. Which options would you like us to develop into costed options
2. Are the default options the right options
3. Is 25 years the right period of time to test our investment plans to demonstrate benefit to consumers?'

'Using the Right Scenarios'

1. Do you support our approach to using Future Energy Scenarios?

'Tactical Reinforcement'

We are in the process of developing our engagement approach on tactical reinforcement. It is a relatively low materiality topic whereby we would complete network reinforcement in response to specific customer issues. The reinforcement would be undertaken in consideration of the regional investment required to mitigate the likelihood and impact of a gas supply emergency, particularly to domestic consumers in certain geographies. For example, engagement related to reinforcements at the Blackrod offtake which supports gas flows to Manchester are being held bilaterally with Cadent, the distribution network in that area. Our main engagement with be through one to one discussion with relevant gas distribution networks and this topic of tactical reinforcement is not considered further in this engagement log.

May 2019 Update

We have decided to take a limited engagement approach on tactical reinforcement. Following conversations with GDN's where we identified potential Network issues that might affect them, we are now proposing network reinforcement to address one specific network issue for one GDN customer. Our main engagement with be through one to one discussion with relevant gas distribution networks and this topic of tactical reinforcement is not considered further in this engagement log.

Regional Focus

Based on our stakeholder engagement to date, we haven't received any further insight to suggest regional variations. From the regional events we held to explore any differences, the feedback and insight was

similar and reinforced the view that a whole system approach is important. As previously mentioned, within this stakeholder priority, the tactical reinforcement topic is the only area with specific regional focus. We are continuing to engage with the Scottish Government and regional regulators.

Framing our Engagement Approach

In the formation of these activities and questions and the development of the feedback gathering exercises, a third party company, Frontier Economics, reviewed the proposals and gave some insights. To remove the chance the feedback will be dominated by one group or voice, Frontier suggested combining and giving one colour of post it per stakeholder group. When presenting stakeholders with choices, Frontier provided an example of how to structure a question effectively: 'we have a budget of x, what 2-3 things would you like to prioritise out of all the things you want?'. This feedback was reflected in the way the engagement with our stakeholders was framed.

Risk

In planning our engagement, we also identified a number of key risks to the delivery of the engagement:

- Availability of National Grid subject matter experts to support the engagement activities
- Drafting and framing questions in the right manner
- Time limitations to engage with all required stakeholders in time available
- Stakeholder fatigue

The mitigation of these risks was primarily managed through the use of the workshops and events encompassing a number of stakeholder segments, supported by bilateral interactions. Stakeholder fatigue is however an important consideration as we move into the next stages of engagement.

1.4 WHAT IS THE ENGAGEMENT APPROACH?

I. What insight have been gathered to inform engagement approach?
II. Approach to engagement and why have you chosen this approach, is it: inform, consult, involve, collaborate, empower
III. Engagement activities, methodologies and tools (ongoing engagement, bespoke engagement, willingness to pay, qualitative research, surveys, complaints intelligence, market data) and sources from which decision will be made.
IV. What innovative engagement methods have you considered?
V. Stakeholder mapping – who are key stakeholders (anyone who believes they are affected by your decisions), which segment (and why, including impact and interest of topic on stakeholder) Recognising the different threads of the public interest – stakeholders, customers, consumers, citizens, communities (geographical and interest)
VI. How has any feedback from Frontier been incorporated?

Our Planned Approach

Given the complexity and materiality, our RIIO-2 engagement approach on this topic has three phases:

1. inform and educate our stakeholders on the key issues,
2. move into open conversations to understand our customer needs and discuss appropriate outputs
3. present costed options based on the insight we have heard.

Although there are some stakeholders we still need to engage with, we have broadly completed the inform stage and are moving through from open conversations towards costed options.

Inform	Educate customers and consumers on the impacts of the changing network and customer bill impacts.
Open conversations – Stakeholder needs and National Grid Outputs	What do people want the network to do? What is the impact on them if the network can't meet their requirements? What they value and what they need? How should National Grid be measured? What might appropriate outputs look like? How should we articulate the options?
Costed Options	Physical network options with associated costs for maintaining assets vs decommissioning, Commercial framework options and associated costs Impact on customers Impact on network charges/consumer bills

The activities planned included five different engagement methods, including regional events with connected customers and engagement via existing forums for stakeholder in the customers-shippers segment. We also planned to engage bi-laterally with the HSE, BEIS and the environmental agencies.

What	Who	Location	Desired Outcome	Engagement status
Workshops at our Terminals	Terminal operators Offshore producers Government (Local Authorities)	Bacton St Fergus	Understand needs from the network by stakeholder segment and geographical location and impact of limiting options	Events complete with follow on bi-lateral engagement is ongoing.
Regional engagement	Network Companies (Gas Distribution Networks) Other connected customers Storage operators Government (Local Authorities)	Workshop within different GDN boundaries		Ongoing
Shipper engagement via existing mechanisms or Focus groups	Existing engaged shippers Hard to reach shippers	N/A		Ongoing
Bilaterals	Health and Safety Executive Environment Agency /Scottish Environmental Protection Authority BEIS	N/A	Share outcome of engagement Support options and impact on Safety, Environment and Security of supply	Ongoing
Consumer engagement – Immersion events, Willingness to pay survey	Domestic consumers	TBD – Focus group in each geography	Qualitative insight on impact of supply loss (with DN) Evidenced preferred costed option	Ongoing

Regional and Terminal Events

The structure of the regional and terminal events was a one day event which included welcome and introductions from the senior National Grid Gas Transmission management team. This was followed by a series of overview presentations giving context to our business and to explain to stakeholders our performance and the challenges we face.

Throughout the morning sessions we used a series of quick polls with voting through an app to gather fast insight and feedback 'What three words would you use to describe gas transmission', and 'How much would you say you know about National Grid's operational activities'. The latter sessions then focused on the key

topics we're engaging on with the stakeholders and we asked questions at facilitated round table sessions as well as continued with the quick polls. These were designed to understand our stakeholder requirements and gain feedback which we can use to shape the costed options in the next phase of engagement.

An overview of the 80-minute Gas On and Off interactive session at Bacton is presented below:

Firstly, we gave an **Overview presentation** on NTS activities and the challenges we face in day to day network operation, which was followed by discussion on **Delivering the right NTS.** There were four discussion questions:

1. If you can't put your gas on or take it off when and where you want, what processes are impacted?
2. What type of impact will you see if those processes are interrupted?
3. Under current market conditions, what level of disruption would be acceptable to your business?
4. Out of all the services we provide, which aspects could we improve to make your processes more efficient or deliver more value to your business?

The 10 minute session on **Scenarios and Planning Assumptions** gave an overview of FES, which was followed by one discussion question 'What are your thoughts on our approach to using Future Energy Scenarios?' followed by two voting questions:

1. On a scale of 1 to 5, where 1 is not impacted at all and 5 is impacted a great deal, how impacted are you (or those you represent) by what we've just spoken about?
2. Do you support our approach to using Future Energy Scenarios?

The third session relevant to this stakeholder priority was the 30 minute **Asset Health** session, within which the first discussion question was which options would you like us to develop in to costed options? We explained that these options had been arrived at following the outcome of the listening phase and we were looking to explore which options we should develop in to fully costed options to allow a more robust discussion. Graphs were provided on the tables to show a very high-level, estimate of the impacts of these options. The second discussion question was 'Over what period of time should we test our investment plans to demonstrate benefit to consumers?'. During the listen phase, stakeholders told us this should be around 25 years so we asked attendees, 'do you agree or should it be longer/shorter? If so, why?'. We then carried out three voting questions:

1. On a scale of 1 to 5, where 1 is not impacted at all and 5 is impacted a great deal, how impacted are you (or those you represent) by what we've just spoken about?
2. Are the default options the correct options?
3. Is 25 years the right period of time to test our investment plans to demonstrate benefit to consumers?

The sessions at the three other regional and terminal events were run in a similar manner.

2: POST-ENGAGEMENT

2.1 WHAT WERE THE ENGAGEMENT OUTCOMES AND HOW HAS THIS INFLUENCED OPTIONS?

I. *Stakeholders involved – all impacted stakeholders have been engaged (planned vs actual). What did they score themselves on impact, interest or knowledge?*
II. *What were the outcomes?*
III. *Overview of responses (must provide as deep dive if required)*
IV. *How were the outcomes measured and what evidence do you have? Quantitative and qualitative. How often did points come up and how often responses received?*
V. *Does it meet the needs of targeted stakeholders?*
VI. *Articulation of options plan or process presented (benefits/limitations/ timing)?*
VII. *How have you considered impact on safety in options?*
VIII. *How have you considered impact on customer in options?*
IX. *How have you considered innovation in options e.g. innovative approaches to engagement or innovation projects?*

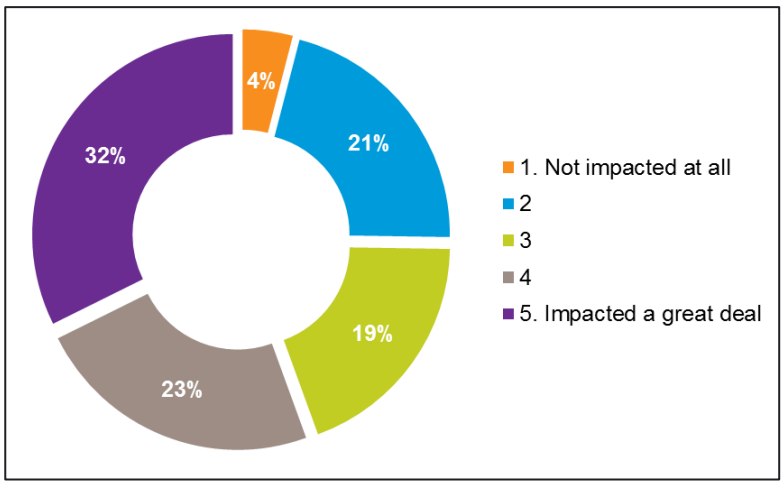
Workshops and Regional Events

The majority of the RIIO-2 engagement to date on this stakeholder priority has been delivered through two regional events, held in London and Chester and two events held at our terminal facilities at St Fergus and Bacton entitled ‘Future needs of the Network’. We had planned to carry out two more events, one in Hull and one in Cardiff but these were cancelled through lack of registered attendees. The two stakeholders who had registered for these events were asked if they would like a bi-lateral meeting as an alternative, one of whom accepted.

A summary of the events and respective attendees in their stakeholder segments is provided in the table below:

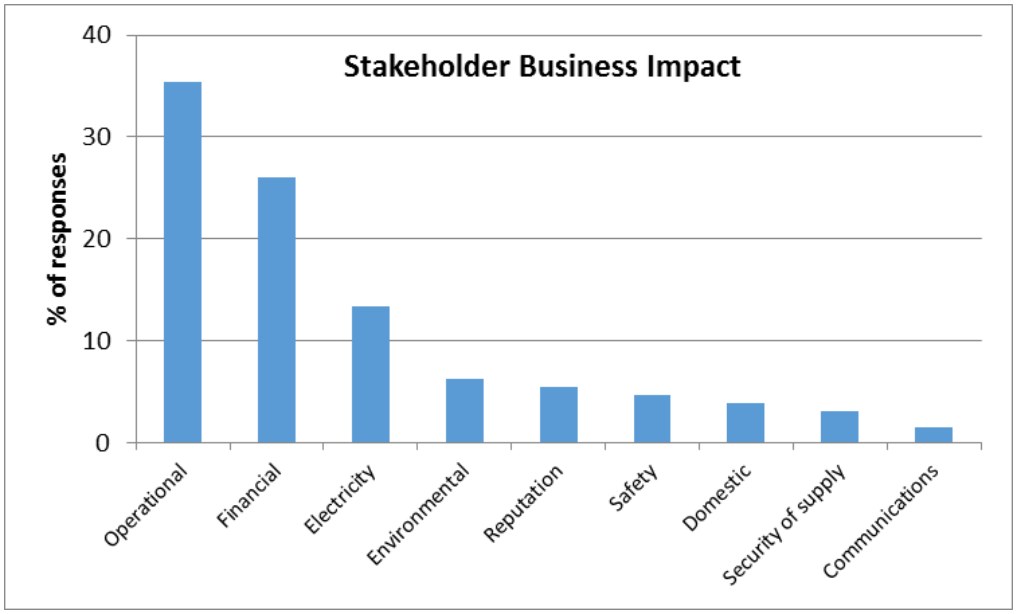
Event	Date	Customer-connected and Customer-shipper	Regulatory and Government	Network Company	Academics and Think Tanks and Innovators	Supply Chain	Consumer Bodies, Interest Groups and Other
Future needs of the Network – St. Fergus	03/07/2018	4	1	0	1	0	0
Future needs of the network - London	09/07/2018	6	1	1	2	0	1
Future needs of the network - Bacton	12/07/2018	5	0	3	1	3	1
Future needs of the network - Chester	17/07/2018	5	1	1	2	10	1

The events were successful in gaining stakeholder insight across the range of topic areas relevant to the “I want to take gas on and off the NTS when and where I want”. As per the event structure described in the previous section, the use of the quick poll questions generated useful insight on a number of high level points. For example, we asked “Relating to moving gas on and off the system, on a scale of 1 to 5, where 1 is not impacted at all and 5 is impacted a great deal, how impacted are you by this?” and received the following response:



It is clear that this stakeholder priority is very important with 32% of attendees scoring five (impacted a great deal) and only 4% scoring 1 (not impacted at all). This response indicates that robust stakeholder engagement and insight are essential in developing the right framework for the future NTS.

When asked the question which of their business process are impacted if stakeholders are unable to flow gas without disruption, responses were provided in a free text, qualitative format. With some stakeholders contributing more than one response, there were 127 comments in total. Based on a subsequent review and categorisation of these written responses it can be seen on the chart and within the quotes below that stakeholders have strongly indicated that operational and financial impacts are most strongly felt by their respective organisations as well as the consequential impact on electricity generation. This confirms the need to holistically consider both physical and commercial frameworks for the future NTS.



Example quotes:

"50% of our business comes from oil and gas so the impact physically and commercially are both really important as 50% of the business will be affected." – [redacted], Supply Chain

"There would be a high impact to finances. As we would be unable to generate electricity, unable to meet stakeholder requirements and not be able to meet trader demands." - [redacted]- connected

"To power stations there will be a high operational and financial impact and could potentially break the plant." - [redacted] - connected

When asked the question "under current market conditions, what level of disruption would be acceptable to your business?" 71% of respondents refer to a number of hours whilst 17% of respondents refer to a number of days as the critical time period for acceptable levels of disruption. Another important factor is the difference in impact of disruption for NTS entry customers versus NTS exit customers, with entry customers likely to manage unplanned disruption for a number of hours due to their flexibility in upstream plant and assets.

Example quotes:

"If unplanned then 6 hours would be the maximum level of disruption we would be able to manage. This is because, we'd be unable to meet our end of day nominations of upstream shippers." [redacted] Customer - connected

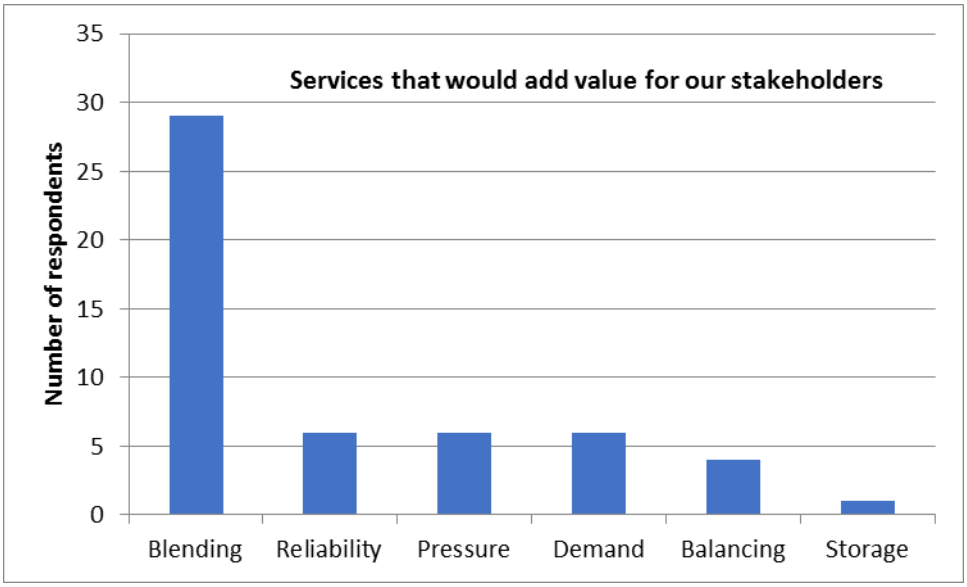
"If unplanned we will not be able to meet trader's demands. 6 hours per day is the maximum level of disruption we can cope with." [redacted], Customer – connected

"Over 6 hours is scratching our heads, 12 hours is hard work, 18 hours is really bad.12 hours would cause shutdown." [redacted], Customer – connected

However, for exit customers and the downstream gas consumer, the impacts are immediate:

"A lot of these comments are hypothetical scenarios. Domestic customers must have gas at all times. Nuclear supply must have gas as a safety measure."

In response to the question, 'out of all the services we provide, which aspects could we improve to make your processes more efficient or deliver more value to your business?', over half of all the 52 responses indicated gas blending on system entry or gas quality related services were of the highest importance, and over 30% of the remaining responses mention either reliability, demand side response or pressure related services.

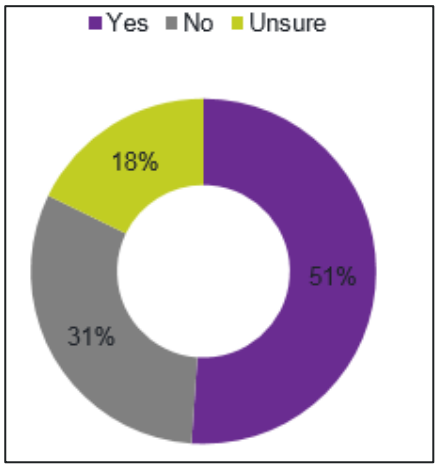


It is these insights into services that would add value that will enable us to focus our subsequent phases of stakeholder engagement where they are most relevant to our stakeholder's areas of value and develop a business plan that considers the needs of the different stakeholder segments.

The asset health questions also generated useful insight. In response to 'Which options would you like us to develop in to costed options?' there was not a complete consensus as shown in the table below:

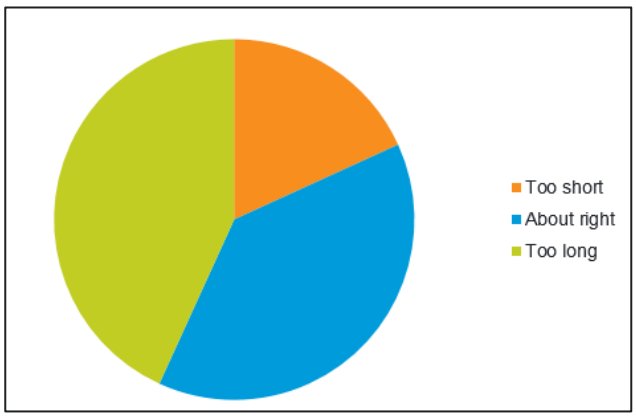
Options	Number of stakeholders supporting costing this option & general reason		Number of stakeholders not supporting costing this option & general reason		Option taken forward
10% reduction in availability/ reliability risk	15	Producers want more reliability- cost increase would be marginal to consumer	2		X
10% reduction in environmental risk	11	Environmental standards are likely to increase	2		
10% increase in availability/ reliability risk	10	Should cost this to show Ofgem the repercussions if NG aren't given enough to invest	7	NG have to meet their obligations/ conditions for licence	
10% reduction in safety risk (i.e. safer)	10	Safer kit should improve reliability and reduce environmental damage	4	Could drive wrong behaviour e.g. reluctance to report near misses/ increased costs	
DEFAULT OPTION: Keep risk the same	6	Known predictability and the same level of costs are worth costing out/ good societal impact	0		X
DEFAULT OPTION: Keep costs the same for consumers as T1	4	Known predictability and the same level of costs are worth costing out	0		X
10% increase in safety risk (i.e. less safe)	3	Most HSE prosecutions come from risks not being reduced as low as possible	18	NG have a legislative duty and this would be classed as an aggregative factor if you did have an accident.	
DEFAULT OPTION: Lowest whole lifecycle cost	2	Costs now but savings later due to reduced maintenance costs.	6	Due to the age of the assets this isn't possible/ Too large a trade off with safety, reliability and environment.	
10% increase in environmental risk	1	Should cost this up to see, however consider baseline, reputation and social responsibility	13	Politically unacceptable	

50% of respondents did agree that the three default options – keep costs the same as RIIO-1, keep the level of risk the same and lowest while lifecycle cost should all be taken forward. However, there was some uncertainty from the remaining 30% so after further consideration, we have decided to take two of the default options forward – keep costs the same for consumer as RIIO-1 and keep risk the same – but also the most highly supported non-default option, 10% reduction in availability and risk.



"10% reduction in availability/reliability risk should be costed." - [redacted], Interest Groups
"Safer kit should improve reliability and reduce environmental damage." - [redacted], Interest Groups

In response to the question 'Is 25 years the right period of time to test our investment plans to demonstrate benefit to consumers?' it is clear stakeholders mainly believe the timeframe should be similar or shorter.



In most cases the reasoning behind this is the uncertain future of gas:

> ***"25 years is too long because of the uncertainty of the way the market is going***."
> - [redacted]

The question related to scenarios and planning assumptions also gives clear insight. In response to the question 'Do you support our approach to using Future Energy Scenarios?' 71% responded 'yes' and 12% 'partly'. In addition, the RIIO challenge group and Ofgem have requested an industry agreed scenario for business planning which we will be developing alongside the other network companies.

Shipper Forums and Bilaterals

Event	Date
Gas Operations Forum - Customer Listening Session	28/06/2018
Meeting with Scottish Government	12/09/2018
South North Sea Operators Forum	27/09/2018
Drax	July 2018
Oil and Gas UK	24/10/2018

As well as the regional and terminal events, we have carried out stakeholder engagement at various other existing forums as well as a number of bilateral meetings. These events are particularly useful in helping us build a picture of what our customers value.

At the recent Oil and Gas UK workshop, we presented an initial view of costed options which generated lots of questions which will require further work to answer fully. In particular, the attendees highlighted that there should be a cost efficiency option which we will look into further. Similarly to other events, in response to the question, "what would you like National Grid to focus on to either improve or develop a new service?" blending was again a common theme amongst the respondents.

> ***"Blending service beyond point of entry into NTS, already highlighted in earlier consultation. Assist entry of new non - GSMR compliant sources into network"*** - [redacted], Customer-connected.

Following the engagement activities, we carried out we held two feedback webinars.

Event	Date
Future needs of the network - feedback webinar 1	31/07/2018
Future needs of the network -feedback webinar 2	07/08/2017

With over thirty stakeholders represented including those from the Customer- connected, Customer-shipper and Interest Groups, directly attending the feedback webinars, this was an opportunity to play back what we had heard. When asked the question, 'Do you feel your voice has been reflected in what we've just talked about?' 68% of responders answered yes. 8% answered partly and 24% gave their answer as not applicable. Of the two attendees who answered 'partly' further follow up explanation was given as:

> ***"Information provision was not discussed. Also concept [og] NGG legislative safety standards"***

and

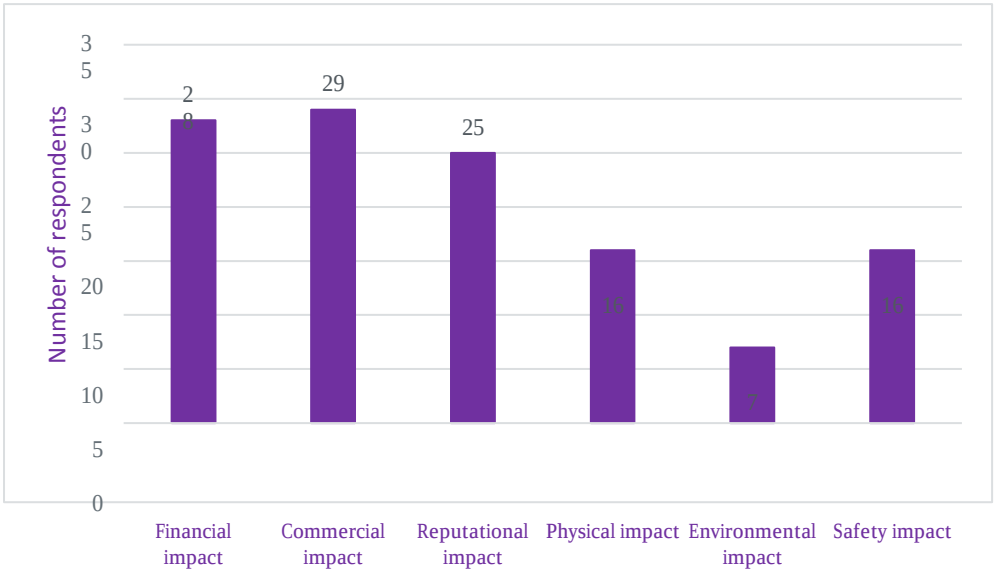
> ***"As before I think there needs to be a regular series of events to gather more data and make it more robust"***.

Hence our key action is to maintain a strong continuation of engagement activities over the next phase of building our business plan.

May 2019 update

A further engagement interaction was conducted via an online survey of Major Energy Users. The survey contained four questions relevant to the gas on and off the NTS chapter, similar questions to those in the sections above. The questions asked and answers given are presented below:

1. What impact will you see if you can't use gas when you want?
   Commercial and financial impacts were the most common response, but reputational also scored highly.



2. Is there a difference in impact between total shutdown and reduced service?

   63% can cope with a level of reduced gas supply.

   "it could be the difference between schools and public buildings being forced to close or not."
   "If we have enough gas to keep furnaces and kilns warm it will prevent major damage."

   "Reduced availability may interrupt processes although it is possible it allows to operate at reduced rate. Reliability and certainty of delivery is key for most processes."

   "this would depend on time of day and season"

37% cannot cope with any sort of disruption to gas supply

   "No difference as production requires a full gas supply"

   "No, both equate to business failure"

   "we use gas for heating and without full pressure the system won't work and we have to shut it down".

3. If your service was interrupted, what length of time would be acceptable to you?

   82% would accept less than 1 hour interruption to their gas supply:

Time	% of respondents
0 - <15min	55%
<1hr	27%

<6hrs	5%
<24hr	9%

<3days	5%

4. Do any of your answers change depending on how much notice you are given before an interruption?

   62% would accept a longer interruption with notice

   38% would not tolerate any disruption even with notice

   "How much notice depends on the length of interruption"

   "discuss any potential outages due to scheduled maintenance or similar planned events to allow for our input into the timing of disruptions in order to minimise impacts."

The results from the survey are now being used alongside the earlier engagement insight and helping to inform the network capability work including an articulation of the current capability of the network and capability metrics.

October 2019 update

We had heard through the previous engagement methods the customers want to be able to alter the location, volume and profile of their gas flows in response to prevailing market conditions. Stakeholder feedback confirmed that the current system operator activities provide customers with unconstrained access to a safe and efficient network. A further piece of consumer insight on the gas system operation element of this topic is presented in the table below.

	Gas system operation: Consumer acceptability testing
New stakeholder information and insight	The majority of domestic consumers supports the current plans for managing the gas transmission system and related costs (66%), however, 24% of respondents only support the proposed actions but not the related costs.
Stakeholder source	Domestic consumers
Trade-offs between priorities	Customers are trading off between reliability and cost in making their response.
Source document	Acceptability – Phase 2 survey
Robustness	The findings are relevant and representative for domestic customers. However, there are some issues with validity as consumers may find it difficult to comment on very small bill increases.
Relation to existing stakeholder evidence in business plan	First evidence on the acceptability of the proposals, hence not comparable with existing stakeholder views.
Changes to the business plan conclusions and proposed actions	NGGT received support for the proposed actions, however it should present further information on options it has explored to reduce costs.

The majority of domestic consumers accept NGGT's proposals in this area, though a significant proportion (around a quarter) do not accept the costs. Consumers are trading off cost and outcomes, but the majority are happy with NGGT's proposals. We therefore will look to draw more evidence on the approach we have taken to secure cost efficiencies in this area.

2.2 WHAT WAS THE FEEDBACK ON THE ENGAGEMENT APPROACH?

I. Was the engagement channel effective?

II. *What feedback was received from stakeholders on the engagement approach?*
III. *What lessons have been learnt and has this been shared?*
IV. *Has best practice been shared?*

The range of engagement channels we have used to date have been effective in delivering interactions with the stakeholder segments identified as important during the planning phase. The feedback from the events has been positive. At the end of the regional and terminal events we asked “And finally, based on all of the information available to you and thinking about the workshop as a whole, were you able to contribute to today’s topics?” 70% of respondents answered ‘yes’, 27% answered ‘somewhat’ and 2% (one individual) answered ‘no’. We have applied our learning from these initial engagement activities to the planning of future events and interactions.

We have also begun work with a third party company Truth to develop our stakeholder engagement approach and to identify gaps and solutions to those gaps in the activities we have undertaken to date. Truth has logged, catalogued, reviewed, examined and analysed a range of documents provided by National Grid related to existing RIIO2 specific engagements and, where available BAU engagements, and conducted initial exploratory conversations with a number of National Grid staff. Truth have provided feedback on the following three topics

Delivering the right capabilities of the network

Using the right scenarios to build our business plan

Asset Health

The Truth feedback has been useful in validating our initial conclusions and agree that there is further engagement to undertake in a number of stakeholder segments, for example future customers and will be build this into our next phase of engagement.

We also asked Truth to consider any third party research for review as part of the development of our RIIO-2 business plans. This has resulted in limited suggestions to date – a research document produced by

UKERC and Warwick Business School that looks at the security of future demand as a challenge to the integrity of the gas supply chain and the ENA Gas Innovation Strategy.

2.3 WHAT WERE THE INITIAL NATIONAL GRID CONCLUSIONS

I. *Was there clear agreement on the outcomes from stakeholders? This outcome will directly inform our conclusions*
II. *If there was disagreement on the outcome across which stakeholder groups?*
III. *Have we drawn conclusions by placing greatest weighting on the views of those stakeholder most impacted?*
IV. *Was the outcome inconclusive?*
V. *Is our conclusion endorsed by other sources; bespoke engagement, BAU or external third parties for example is there existing third party research?*
VI. *Will further engagement activities be required to reach a conclusive outcome?*
VII. *Outcomes against decision making framework:*
    a. *Regulatory requirements - Do the outcomes meet all National Grid regulatory requirements? (check with regulation, all options presented should meet this requirement)*
    b. *Ofgem's RIIO2 outcomes and Strategy - giving consumers a stronger voice; responding to changes in how networks are used; driving innovation and efficiency; simplification?*
    c. *Government agenda - Do the outcomes align with latest Government direction (e.g. industrial strategy)*
    d. *Meeting the needs of targeted stakeholders*
    e. *End consumer bill impact*
    f. *Transparency of trade-offs – has a trade-off been made? If so what considerations allowed you to reach a conclusion?*
    g. *Benchmarking and CBA analysis*

The engagement we have completed to date has been extremely useful in providing the initial insight we required to understand our stakeholders needs. Setting the right framework of assets and commercial options is extremely important to stakeholders as both these aspects, have the potential to significantly impact their businesses and the wider energy sector.

The insight we have gained to date indicates that there is further detailed work we should undertake with our stakeholders on the trade-off between investment costs and network disruption. The impact of disruption felt by the majority of our stakeholders is significant and this impact is realised in various ways – financial, operational, environmental etc. However, there are certain differences within the connected customer segment, for example between our connected customers on entry versus those on exit which could allow for a more tailored framework. We will therefore require further engagement to validate what we've heard from those who attended the events to date across a wider spectrum of stakeholders. We are also starting to present costs of different options to our stakeholder and will go on to investigate the regulatory framework options that could support this insight.

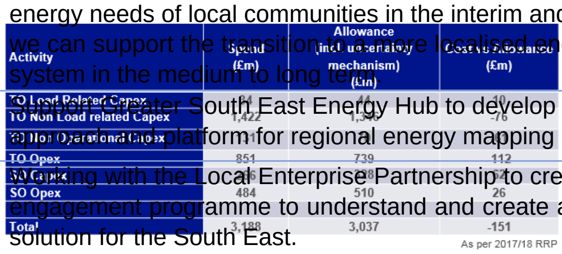
Insight into areas where we can add value will also help to focus development of costed options as we move into the next phase of engagement. Gas blending and gas quality related services have been identified as the most important with the stakeholders engaged to date. We have begun work to build a scope for further engagement with stakeholders on this topic which will be discussed in the later version of this log once the work has progressed further.

The future energy scenarios are broadly accepted as the basis for future planning in our RIIO-2 business plan. The asset health costed options engagement has not generated a complete consensus. However, stakeholders have indicated costed options where we flex the level of environmental and reliability risk are of interest as part of the next phase of engagement on asset health investment whilst those that increase our risk in safety outputs will not be developed further.

We will continue to engage stakeholders on our plans through the latter part of 2018 and into 2019. Based on these conclusions, there are some specific areas where we want to explore options to reduce costs and

still meet customer and stakeholder needs. There is also further engagement to be completed with particular stakeholder segments. The complete programme of engagement is still being developed and will include webinars, workshops and bilaterals. The planned events at the current time are presented below and will allow us to gain insight into the key areas.

Event	Date	Desired outcome
Industry workshop on interactions across baselines, incentives and charges	November 2018 Output presented in incentives deep dive paper	Inform session to educate stakeholders on the topic of baselines as an Ofgem review of entry baselines is to be undertaken. This session should inform stakeholders, to enable their participation from a position of knowledge as part of the Baseline review. This will also include a discussion on Gas Year vs Regulatory Year - understanding of the impacts of this issue and identification of future options.
Asset Health Webinar	13th November Output presented in	Inform on the story of Asset Health so far Share process and costed options Gauge opinion on this Articulate how all elements are joined together
British Ceramic Confederation	22nd November 2018 Complete	Engagement with a major user group Articulate why major users need to be involved in this process Provide overview on each of their key interest areas to inform their thinking Introduce survey and encourage responses
Energy and Utilities Alliance (EUA) trade forum	22nd November 2018 Output presented in asset health deep dive paper	Raise the profile of the challenges facing Gas Transmission • Long term use of the network • Aging Assets • Network utilisation (whole energy system) Asset Health • Inform on the story of Asset Health so far • Share process and costed options • Gauge opinion on this • Articulate how all elements are joined together Articulate how stakeholders can get involved in the process
Maj[redacted]gy Users Council (MEUC)	~~4th December 2018~~ Survey complete	Engagement with a major user group Articulate why major users need to be involved in this process Provide overview on each of their key interest areas to inform their thinking Introduce survey and encourage responses
National Energy Hubs – Developing local energy best practice	~~TBC~~ Did not go ahead	Support South West Energy hub develop best practice. Work with the group to identify how Gas Transmission can deliver the energy needs of local communities in the interim and then how we can support the transition to a more localised energy system in the medium to long term.
National Energy Hubs – Data Mapping	~~21st November~~ Did not go ahead	Support Greater South East Energy Hub to develop a national approach and platform for regional energy mapping
Cambridgeshire and Peterborough Combined Authority	~~TBC~~ Did not go ahead	Working with the Local Enterprise Partnership to create an engagement programme to understand and create an energy solution for the South East. This is an area that will require significant focus in T2 due to high energy demand and the aging assets in the region.
Bac[redacted]ategy: One to Ones [redacted]	Numerous Presented in asset health deep dive paper	One to ones with key stakeholders of the Bacton terminal to understand their current and future needs of the terminal. Including: Shell, Neptune, BBL, IUK, Independent Oil and Gas, HSE, Perenco, Oil and Gas Authority



Activity	Spend (£m)	Allowance (incl uncertainty mechanism) (£m)	Cost vs Allowance (£m)
TO Load Related Capex	[illegible]	[illegible]	10
TO Non Load related Capex	1,422	[illegible]	-76
TO Non Operational Capex	[illegible]	[illegible]	[illegible]
TO Opex	851	739	112
SO Capex	[illegible]	[illegible]	[illegible]
SO Opex	484	510	26
Total	3,188	3,037	-151

As per 2017/18 RRP

Bacton Strategy Workshop	13th December Presented in asset health deep dive paper	Following the one to ones we will pull together a number of options that will deliver our stakeholders needs. During this workshop we will share these costed options together with the impacts on service etc. We will ask stakeholders their views on each option.

3. STAKEHOLDER GROUP CHALLENGE & REVIEW

3.1 WHAT POINTS OF CLARIFICATION AND INTEREST WERE RAISED?

National Grid circulated version 1 of this engagement log on the 14th November 2018 in advance of the Stakeholder Group meeting. Pre-meeting calls were held to collect feedback on the log and any points of clarification, as set out below.

	Feedback	
XXXX	1. Context makes good sense – sets out costs clearly. Existing insight very detailed – contrasting with the more general topic. 2. IED costs reopener presents Grid's opinions as facts: 'This reopener has introduced regulatory uncertainty...'. Given that Ofgem and at least one stakeholder (us!) disagree, the differing opinions should be made clear. NOMs – I don't think our response was as positive as the sample quote. 3. GDNs are important stakeholders but unusual in that Exit Capacity charges are directly passed-through to suppliers (i.e. they not exposed to increased costs). What difference does this make to engagement?) 4. On the KPIs, it would be useful to see what the baseline level of performance was at the start of the price control (i.e. how much has performance improved) and the value of any incentive reward/ penalty (if any applies)	1. N/A 2. Changes made to text on page 11. The NOMS quote is taken from the introductory paragraph of the response however hyperlinks added to direct to the full responses. 3. We have noted the challenge from the stakeholder group that the insight should be separated between the different stakeholder segments, in particular those who pay and those who don't. Whilst we haven't assigned a specific weighting to these different views, in further iterations of these engagement logs we have attributed quotes to specific stakeholder organisations to make the insight more transparent. 4. We have provided our RIIO-1 financial performance in subsequent presentations including the RIIO-1 webinar and the incentives deep dive paper. To provide the necessary context, there is a RIIO-1 overview in each chapter of the business plan which will be presented in June.
XXXX	Gas on and off. Presented clearly. A lot of engagement with the sector. Jenny's session was clear and comprehensible. Engaging with the right people about the right issues (baselines, blending etc)	N/A
XXXX	1. What innovation do we do to avoid maintenance costs? And	1. Our detailed innovation proposals were presented in a paper at SG7 and further challenges have been recorded against that paper specifically. This includes a full list of RIIO-1 projects covering asset health and maintenance.

	Innovation – should cover spend / turnover, Innovation own spend / allowances, Innovation ambition 2. What costs do we incur to ensure there is an unconstrained supply? 3. 80/20-% funding split – how has this been created and should this evolve with less spend on assets and more on smart systems? 4. Too much like a typical asset management company – "what is", rather than "what could be"? 5. Why are Ofgem pushing one scenario – seems like a 'dumming down' of the issues. 6. GFOP – is this done collaboratively with other networks? 7. Gas markets – if this is national infrastructure is the government an overriding stakeholder? 8. Seeing some stakeholder fatigue – NG need to demonstrate open to access but interactions need to be effective 10. Operational liaison – seems passive and not future looking.	2. Whether directly or indirectly our core function in gas transmission is ensuring that gas is transported without constraint. The costs to ensure customers can take gas on and off the network when are where they want are embedded across the full range of business activities. For example maintaining compressor and pipeline availability is crucial as is ensuring the reliability of a range of other secondary assets. Costs associated with our control room operations ensure that demand and supply are balanced. Our RIIO-1 TOTEX is £3.2bn (17/18 price base) over eight years. 3.The 80:20 funding split indicated on page 6 would include expenditure on innovative technologies such as smart systems. We are committing to a innovation funding pot of ~£6m/yr within the business plan. There is also further investment in systems utilising machine learning, investment planning and network analysis (which will be presented in more detail in the July business plan draft). We also have IS related expenditure in other chapters such as external threats and whole energy systems. 4. N/A 5. The report on the Ofgem single scenario work is available on Huddle under SG7. This is a common set of assumptions on which the network companies have based their business plan. We are still utilising the envelope of demand and supply patterns within FES 2018 in order to test our business plan proposals. 6. The aim of the Gas Future Operability Planning (GFOP) document is to describe how this changing energy landscape and your changing requirements may affect the future capability and operability of the National Transmission System (NTS) out to 2050. 7. Government are a key stakeholder and future policy will determine the long-term future of the gas transmission system. However, we are committed to working with the full range of stakeholders – customers, consumers and other impacted parties in order to ensure the future pathway to decarbonisation is an efficient and effective one. 8. Comments noted. In the latter stages of engagement, we have been seeking to make maximum use of existing opportunities to interact with stakeholders rather than standalone, additional events. We also switched from face to face workshops and meetings to a greater emphasis on webinars based on feedback from attendees that online engagement was easier and more flexible to participate in. 9. The investments required to meet the IED legislation were identified as part of the RIIO-1 negotiation but not funded in the 10. Operational Liaison is operationally focussed engagement which does consider the future requirements of our customers as well as the current issues of the day. We are working to improve the process for exit customers as well as entry.
XXXX	"The methods and questions seem comprehensive and unbiased. There also seems to be a focus in the planning on ensuring that all stakeholder groups were represented. 2. Regarding the initial phases, whilst the forums and 1-1 meetings seem to be effective, the response rate for the formal consultations is extremely low. This may be somewhat to be expected but may also point to the channels used (as I understand it, Grid and the ENA's websites and distribution lists?) not being highly effective? I suppose the only leading question was around the use of FES scenarios where there was little indication of any possibly alternatives. 3. The conclusions drawn seem reasonable and a fair reflection of the consultation for the most part. It's not entirely clear to me why from the feedback	1. N/A 2. We note the comment about the formal response rates being low. We have been working to build knowledge and help to educate stakeholders in areas which impact them in order to improve response rates and participation as part of our RIIO-2 engagement. 3. With regards to the costs, we undertook to reduce the number of options that we would carry through to a more detailed analysis. The options chosen were influenced by the stakeholder

	received on costed options, only 3 are being taken forward. Why not, for example, also the reduction in environmental risk?"	engagement. We also took guidance from Frontier to assess the different options of the different stakeholder segments when deciding which option to takes forward. This is covered in more detail in the asset health paper from SG6.
XXXX	Attended the stakeholder engagement session where Tony presented costed options. This was helpful and requested if we could share an overview plus any key feedback at the meeting.	N/A

3.2 WHAT WAS THE OUTCOME OF THE STAKEHOLDER GROUP CHALLENGE AND REVIEW?

I. Capture all questions and challenges raised by Stakeholder Group
II. Capture agreement/disagreement
III. Executive summary for RIIO Challenge Group

At SG4, National Grid presented a short overview of the topic, including scope, materiality and how the costs are reflected in the overall consumer bill. The Stakeholder Group asked questions around whether advanced notice of flow changes would make a difference to National Grid's operational practices and differences between what customers 'want' and 'need'. The members also asked whether blending solutions would be asset investments or commercial options. There were further points raised on the range of engagement undertaken, the numbers of stakeholders engaged and how the National Grid approach has changed accordingly. The Stakeholder Group also queried the differences in investment for keeping assets maintained versus investment for new capacity, and to what extent the charges in charging and capacity booking will be captured in the business plan.

The Stakeholder Group participated in an interactive session identifying the positive aspects and the limitations of the engagement log working in small groups representing their constituencies which raised a number of key points including:

- National Grid should provide a more balanced view including critical third party views and articulating areas where there is not consensus;
- Highlighting differences between stakeholder segments e.g. large companies and distribution networks due to different needs and pass through of costs

Twelve formal challenges were identified and will be incorporated in the challenge log.

ID	Challenge	National Grid Response
65 and 69 and 74	Be clear how to address gaps in stakeholder engagement and More thought needed at end of consultation engagement and Where do you stop with engagement?	The engagement for the gas on and off the NTS chapter has been quite extensive across multiple phases and topics. Having begun with quite a broad approach as part of the summer 2018 events, this narrowed down to asset health options and investment at Bacton terminal (as presented in the asset health deep dive paper). We will have insight from our consumer engagement programme in the next few months and then the final stages of engagement are primarily focussed on the Network Capability work within this chapter. The output from this complete programme will fully inform the October iteration of the business plan.
66	RIIO-1 context - include Ofgem views and other views to make this more balanced. Feels like a sales pitch, provide diversity of views	The 'critical voices' are similar to those in the Whole Energy System engagement log for this topic i.e. organisations who believe that gas, a fossil fuel, is not the energy vector to invest in. These

<table>
<tr><td></td><td></td><td>organisations will not support further investment in a gas transmission network.</td></tr>
<tr><td>67</td><td>Articulate quality of engagement e.g. feedback summary from events</td><td>We have provided below a summary of the type of feedback we received at our engagement events and the action we took to address the comments. The table below encompasses a range of topics, rather than being specific to gas on and off the NTS.
<table>
<tr><th>Feedback Quote</th><th>National Grid action taken</th></tr>
<tr><td>“Very broad topics with a very broad group of stakeholders. Consider more targeted approach” – Network Company (Shaping the future event, Listen Phase)</td><td>Our second phase of engagement was planned around topics and targeted approach taken.</td></tr>
<tr><td>“I found it really useful and interesting for a newcomer to the gas market” – Regulator, (Shaping the future event, Listen Phase)</td><td>We sought to establish the level of knowledge of stakeholders prior to the event and to ensure appropriate overview was given to ensure minimum level of understanding</td></tr>
<tr><td>“Very open to comments and opinions. Some questions too detailed (about modelling assumptions)” - XXXX XXXX XXX(Shaping the future event, Listen Phase)</td><td>We worked with Frontier Economics to ensure material and questions are plain English and at the right level.</td></tr>
<tr><td>“Good session - would really like to maintain engagement about asset health and compressor upgrade” – Supply Chain (Shaping the future event, Listen Phase</td><td>We developed an engagement programme and sign-posted all upcoming engagement in newsletters. Also, we created a distribution list of impacted/interested parties for all topics based on previous responses during engagement</td></tr>
<tr><td>“National Grid gave a good overview of the business. The event was well organised and facilitated, but a location North of London would be preferable.”- Network Company (Environment Event (London))</td><td>We held additional environment event in Scotland. Future engagement was either geographically diverse or via webinar to minimise impact on stakeholders.</td></tr>
<tr><td>“It was good for background and to understand environmental impact of the sector and challenges faced. However, I would have liked to have seen more depth in discussions which would require more time and information. Yet given it was just a one day event I thought it was pretty good.” - XXXXxxx (Environment event (London))</td><td>We held subsequent 1-1’s held with Citizens Advice and other interested stakeholders to discuss more detailed aspects of the topic. Where possible and relevant, a pre-read document is issued to stakeholders who are attending an event.</td></tr>
<tr><td>“A lot of useful information from the team, also provided a great platform for discussion across users.” – Connected customer (Needs of the network event (St Fergus))</td><td>Engagement activities are structured to allow equal balance of inform, discussion and voting.</td></tr>
<tr><td>“Whilst I enjoyed the workshop and found it very informative, in practice it had very little relevance to HSE.” – Regulator, Needs of the network (London)</td><td>We arranged bilaterals with key stakeholders to discuss relevant topics, reducing stakeholder burden.</td></tr>
<tr><td>“It was very useful for everyone. There was learning on both sides. Good mix of attendees giving excellent discussions. Overwhelming feeling of the need for better communications.” Connected Customer, (Needs of the network (Bacton))</td><td>Regular newsletters and updates to keep the conversation going</td></tr>
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</td></tr>
</table>

68	Be clear on next steps - early sight for stakeholder group	Following the issue of version 1 of this engagement log, the following steps on this topic was the completion of the engagement events presented in the engagement log and then the development of costed options. We held the 'deep dive' on the asset health elements of this chapter at the February meeting, in advance of the business plan in June. Asset health is the most material aspect of this chapter and so the challenges from the stakeholder group form the areas of focus that can be acted upon prior to June.
70	Undersold consequences of failure inc HSE implications, loss of pipeline	At the current time this content is primarily covered within the 'safety ' chapter, which has not yet been shared with the stakeholder group. We propose that once the Stakeholder Group has reviewed this chapter we can then identify if there are any gaps remaining or interlinkages that need to be made more clear. There will be additional information in the July business plan within the area of tactical reinforcement at Blackrod offtake which will address the consequences of supply failure into that region.
		We recorded in the SG5 consumer paper the health and safety related considerations for local communities: We were advised
71	Look at good practice for risk/ probability in deliberative work	investment appraisal. However, including safety attributes in a stated preference survey is not advisable: (A) customers may focus on it at the cost of ignoring other factors, and (B) individuals stated valuation of human life are (like GHG emissions, etc) known to be unusable for CBA. Subsequent to this, whilst the deliberative work in this area has not gone ahead, within our Willingness to Pay programme, NERA have provided background to how they ensure stakeholder believe there is a genuine impact of any low probability high impact event.
72	Ensure innovative thinking is reflected	At SG7 we presented a deep dive paper on our innovation proposals for RIIO-2. This included our portfolio approach covering three categories 'fit for the future', 'ready for decarbonisation' and 'decarbonised energy system'. Initially under 'Fit for the Future' we will look at innovation which can safeguard and prepare our assets for the challenges in operating for the next 50 years and towards a decarbonised future. Further challenges on innovation are recorded against that paper specifically.
73	How users book and pay for capacity needs to be considered in this engagement process	The Charging Review is ongoing and the final decision will not be made until May 2019. We will therefore not specifically take account of this within the July business plan. Also, the Access Review is currently being scoped and there is the opportunity for stakeholders to engage through this process.
75	Need to think through overall strategic implications - articulate strategic options clearly and be more focused	'Network Capability'. In order to deliver the right capabilities for consumers and customers we must first develop a framework that describes and measures the network's capabilities accurately. Looking forward to our October submission, we will use this feedback to support our own analysis of the network options. More specifically on asset health we developed and presented three key options in the Asset Health deep dive paper at SG6. These were as follows:

		1. Maintain spend at RIIO-1 level: Under this option, we hold the health and safety risk stable there would be a higher level of risk in other areas of availability and reliability and environmental. 2. Risk level remains similar to that of RIIO-1: Under this option there is no reduction in the levels of service we provide across all key risk categories (health and safety, availability and reliability and environmental performance). 3. Improve levels of availability and reliability risk by 10%: This option develops the additional costs required to improve availability and reliability risk e.g. the potential to reduce the risk of loss of supply outage by 10%. Subsequent challenges to these options and adaptation of our approach to meet recent Ofgem guidance will be recorded against the Asset Health paper and presented in the asset health section of the "Gas On and Off" the NTS chapter.
76	Different requirements and needs of customer groups needs to be captured - i.e. those paying and those not paying	Within subsequent engagement logs and the Asset Health deep dive paper, we used more verbatim quotes which were attributed to a stakeholder organisation. This helps differentiate between customer organisations and other interested parties.

SG04-G02	28/11/18	SG04	TK to provide information on what asset health options are being explored.	Asset health webinar slides are available here which explain the three options under development • Spend at T1 levels in T2 • Maintain same level of risk as T1 • Improve reliability by 10% at the end of T2

4. CONCLUSIONS

4.1 WHAT IMPACT HAS THIS FEEDBACK HAD ON THE BUSINESS PLAN?

- *What changes have been made to the RIIO-T2 business plan as a result of direct feedback from the Stakeholder Group? (be explicit about outputs)*
- *What changes have been made to future approach to engagement, other business processes, etc. as a result of feedback from Stakeholder Group?*

Our proposal for RIIO-2 is to ensure we have the right level of human resource, trained with the right capabilities, supported by the tools, vehicles, spares and IT systems, to efficiently deliver customers' requirements. The direct influence of feedback from the stakeholder group is presented in the table below:

Stakeholder Group feedback	Impact on RIIO-T2 Business Plan (Outputs)
Articulate strategic options clearly	Clear definition of asset health outputs including price control deliverables for certain aspects of the asset health investment e.g. Bacton.
Stakeholder Group feedback	**Impact on National Grid Business / Processes**
Provide the RIIO-1 context and include Ofgem views and other views to make this more balanced.	We have gone on to ensure that a much greater level of detail around RIIO-1 is provided in subsequent papers to the Stakeholder Group and that this context also forms a key part of each business plan chapter. We also included a section on critical views in the Whole Energy Systems engagement log to drive a better balance for the topic.

4.2 BUSINESS PLAN OUTPUTS ALIGNED TO STAKEHOLDER ENGAGEMENT OUTCOMES.

The golden thread diagram is embedded in a standalone file and illustrates how the business plan outputs align to the stakeholder engagement outcomes.

5. DOCUMENT CHANGE CONTROL

Version Number	Date Updated	Updated by	Comments
1	November 2018	Tamsin Kashap	SG4
2	May 2019	Tamsin Kashap	SG8
3	October 2019	Tamsin Kashap	October submission
4	December 2019	John Perkins	December submission

6. APPENDICES

APPENDIX 6.1 FURTHER DETAIL ON NETWORK OUTPUT MEASURES (NOMS)

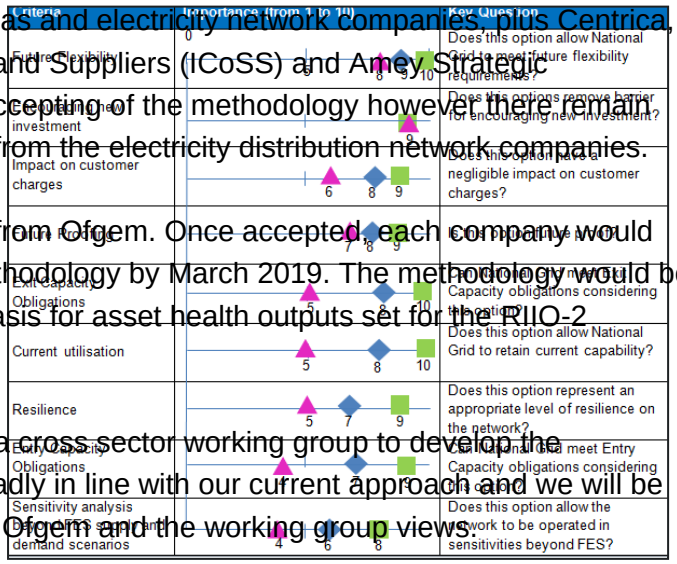
As part of RIIO-1, the network incentives around NOMs outputs were specified in the Licence, however the way in which these would be implemented is not specified in either in the Licence or as part of RIIO-1 Final Proposals. Ofgem looked to establish a methodology ahead of the RIIO-1 close-out process that will also apply for the RIIO-2 price control. In order to agree this methodology, Ofgem convened a NOMs Cross Sector Working Group (NCSWG) comprising Ofgem and representatives of all onshore network companies, which met through the latter part of 2017 and into 2018. These meetings focused on the common reward and penalty principles across the four sectors resulting in Ofgem publishing a draft methodology detailing a common framework for NOMs. The proposed governing principles include:

- A licensee's asset management decisions should be in the interest of consumers
- A licensee should be appropriately incentivised to deliver the agreed levels of risk where it is in the interest of consumers
- A licensee should not be constrained to adhere to its initial RIIO-1 business plan and should have discretion to revise its intervention plan

This framework was then the subject of an Ofgem consultation which ran from the 26th March to the 30th April 2018 within which Ofgem asked a series of questions including :

> Question 1: Does the process as described in the draft methodology flow-chart represent a suitable means of implementing the data gathering and assessment phases of the incentive mechanism? Are there any improvements that you could suggest?
>
> Question 2: Do you agree with the use of a materiality threshold around the NOMs network monetised risk target to assess compliance? Do you consider that the range proposed for the Distribution sectors is appropriate?

The consultation received seventeen responses from gas and electricity network companies, plus Centrica, Citizen's Advice, Industrial and Commercial Shippers and Suppliers (ICoSS) and Amey Strategic Consulting. The majority of responders were broadly accepting of the methodology however there remain concerns around the sectoral differences, in particular from the electricity distribution network companies.



The consultation is currently closed, awaiting decision from Ofgem. Once accepted, each company would then re baseline their NOMs targets in line with the methodology by March 2019. The methodology would be used to determine the RIIO-1 close out and form the basis for asset health outputs set for the RIIO-2 framework.

Ofgem have now engaged with all networks as part of a cross sector working group to develop the methodology for RIIO-2. The Ofgem proposals are broadly in line with our current approach and we will be adjusting our engagement materials to take account of Ofgem and the working group views.

For gas transmission, whilst the RIIO-2 expenditure on asset health is a significant part of the overall TOTEX, the work delivered through the NCSWG and associated consultation will give certainty clarity on how targets will be set, measured and incentivised.

APPENDIX 6.2 FURTHER DETAIL ON IED ENGAGEMENT FROM MAY 2015

In April 2014 we began our initial period of stakeholder engagement. We also publicised the start of the engagement through our Connecting website and a project specific website under the Talking Networks umbrella. We commissioned a video to provide an overview of the IED legislation and its impact on our network and its users.

Then, in July 2014 based on feedback, stakeholder consultations began with an initial workshop and subsequent workshops in September 2014, November 2014 and March 2015. Attendance (22 different attendees across all workshops), represented a wide range of industry participants including shippers, Gas Distribution Networks (GDNs) and trade associations.

In the first workshop to get a better understanding of stakeholders' requirements delegates completed a Gas Transmission Network Strategy scorecard, to identify the network capability criteria that are most important to them and why (Figure 12). This formed the basis for the development of a range of site options. On the 17th November 2014 we published the ***IED Investments: Initial Consultation*** document. In this consultation we asked for stakeholders views on a range of questions including the range of available options for compliance at each affected site.

The ***IED Investments: Initial Consultation Stakeholder Feedback*** document was then published on 16th January 2015 outlining what stakeholders told us in the responses and what we would do as a result, including providing more information on the different elements of legislation.

In February 2015 we presented at the Transmission Workgroup and we also held a number of bilateral discussions to address particular concerns for individual parties including all four GDNs. On the 13th March 2015 we published the ***IED Investments: Proposals Consultation***. This was a development of the initial consultation document in light of stakeholder feedback received. It also provided a recommended option to achieve compliance at each site. The consultation received responses from Centrica, RWE, Total, National Grid Distribution and Energy UK.

Figure 1: Overview of the network strategy scorecard

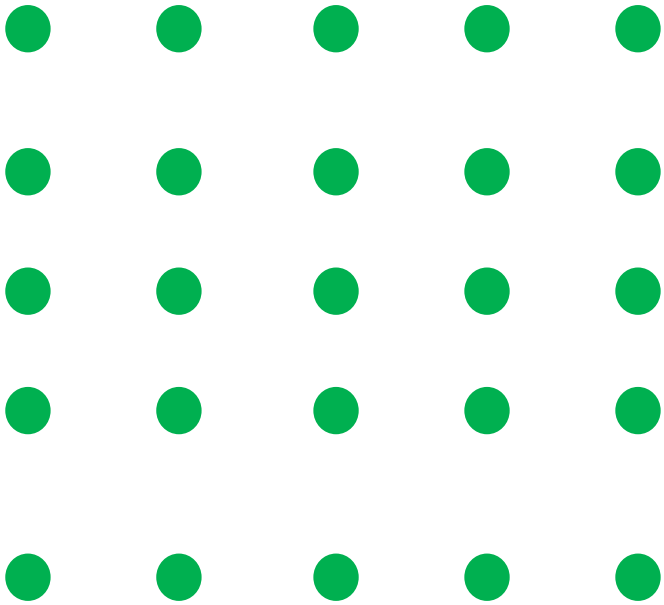
In their responses stakeholders broadly agreed with our recommendations. Ultimately this formed the basis for our IED reopener submission to Ofgem in May 2015. Ofgem, whilst positive about the stakeholder engagement process we had undertaken asked for the submission to be resubmitted in May 2018 with further work on costed options.

APPENDIX 6.3 REGIONAL EVENTS: ACTIVITY DESIGN AND PHOTOS

To ensure stakeholders are able to contribute on all topics, the sessions for all our engagement activities are designed as follows:

Aspect/consideration	Outcome
Overview of the topic	Gives all stakeholders a common level of understanding about the topic. Provides key information and opportunity to ask high level questions
Facilitated discussions: Open question is given to the group. Each table has a facilitator with additional prompt questions to help dig deeper into stakeholders' views. A scribe captures the conversation.	Generates detailed conversation and discussion about the topic. Enables all stakeholders' views to be heard and captured. Helps stakeholders to think broader than obvious thought to extract deeper and wider views and insight.
Table mats: Provide structure to support our stakeholders' thinking and insight capture process	When topics are multi-layered, table mats give stakeholders more support to structure their thinking and therefore their answers. It ensures we get the outcome we need to build our business plans whilst allowing enough flexibility for stakeholders to contribute in a way that works for them
Impact polling questions: Stakeholders are asked to self-select how impacted they feel they are on each topic.	This information is used in our decision-making framework where we will apply weightings to stakeholders to help us triangulate conflicting responses
Topic specific polling questions: Following table discussions we ask stakeholders polling questions to summarise and capture their views on the topic.	This is a good way to capture quantitative insight from our stakeholders about each topic

Stakeholders at the Chester regional event



Stakeholders at the London regional event

APPENDIX 6.4 RIIO-1 PERFORMANCE

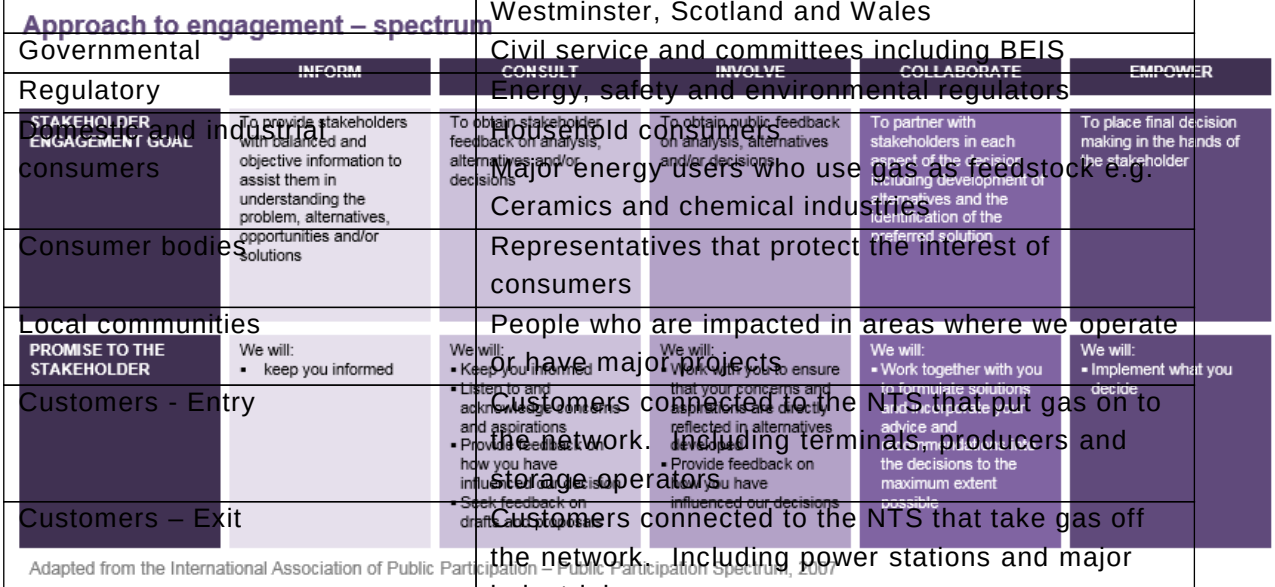
The table below describes our RIIO-1 outputs on safety, reliability and availability alongside our RIIO-1 performance in these areas.

Our outputs in RIIO-T1	Performance Target	2013/14 Performance	2014/15 Performance	2015/16 Performance	2016/17 Performance	2017/18 Performance	2017/18 Performance Comment
Comply with Health and Safety Executive (HSE) legislation	100%						Complied
Meet requirements for enhanced physical site security	Meet BEIS requirement by 2021						On track
Maintain our security of supply obligations in Scotland (Network Flexibility)	Ensure compliance with 1 in 20 obligations by 2020						Strategy in place to ensure compliance
Meet our targets for investing in our assets to maintain their health (NOMs targets)	Deliver network replacement outputs in accordance						In aggregate, on track to deliver eight-year target

	with the licence						
Replace Feeder 9 (pipeline that runs across the Humber Estuary)	Achieve planning consent ahead of reopener submission						On target – Planning approved and construction underway, commissioning planned for September 2020
Deliver benchmark performance for maintenance outage days	11 days (for Remote Valve Operations)						1 maintenance day called
Minimise National Grid driven changes to maintenance planning	20.37 days (<7.25% of workload 20 of 281 days)						No changes
Meet constraint management target	£26.99m allowable costs for entry/exit capacity						£0.43m costs
Meet target for Transmission Support Services and for Constrained Liquefied Natural Gas & Long Run contracting	£9.1m allowable cost						£0m cost
Deliver existing capacity obligations in accordance with Unified Network Code (UNC), Licence and Gas Act	All UNC, Licence and Gas Act capacity obligations to be met in full						System issues, including planned outages, impacted a minority of auctions
Deliver accurate 13:00 day ahead demand forecasting	9.03 mcm average forecast error						8.24 mcm average
Deliver accurate demand forecasting at the two to five days ahead stage	13.70 mcm average forecast error						12.06 mcm average
Meet target for residual balancing linepack performance measure	<2.80 mcm average daily change						1.99 mcm average daily change
Meet target for residual balancing price performance measure	Average daily difference between max and min price paid, to be within 1.5% of System Average Price (SAP)						Difference 1.77% of SAP
Procure Operating Margins (OM) in an economic and efficient manner	Incur OM costs efficiently and publish report on the steps taken to promote competition						Report published on time, £1.9m decrease in cost in 2017/18

APPENDIX 6.5 DEFINITIONS OF STAKEHOLDER SEGMENTS

Stakeholder Segment	Definition
Political	Elected officials and advisors including Westminster, Scotland and Wales
Governmental	Civil service and committees including BEIS
Regulatory	Energy, safety and environmental regulators
Domestic and industrial consumers	Household consumers
Consumer bodies	Representatives that protect the interest of consumers
Local communities	People who are impacted in areas where we operate or have major projects
Customers - Entry	Customers connected to the NTS that put gas on to the network. Including terminals, producers and storage operators
Customers – Exit	Customers connected to the NTS that take gas off the network. Including power stations and major industrial users
Customer – Shippers	Customers that buy and sell gas
Network companies	Other regulated network companies including distribution networks
Think tanks, innovators, academics	Energy specialists, innovators and advisors
Interest groups	Groups representing specialist interests including environment
Supply chain	Developers and suppliers of network assets
Industry trade bodies	Groups that represent specific groups of customers or stakeholders including IGEM, UKOPA, Oil & Gas UK
Other	Stakeholders that are not defined in other segments



APPENDIX 6.6 ENGAGEMENT APPROACH SPECTRUM

We are currently moving from the involve phase into collaborate as we develop costed options to share with our stakeholders and begin to formulate outputs for discussion.

APPENDIX 6.7 ENGAGEMENT PRINCIPLES CHECKLIST

1	Define and map your stakeholders - anyone who believes they are affected by your decisions. Recognising the different threads of the public interest – stakeholders, customers, consumers, citizens, communities (geographical and interest)
2	Be clear what you want to achieve with "engagement" – have clear policy objectives and measures of impact; (incl. where you most need to engage)
3	Understand the "spectrum of participation" and difference between each part of that spectrum: inform, consult, involve, collaborate, empower
4	Engage early in the process, review and improve throughout
5	Leadership – effective stakeholder engagement must be led from the top of the organisation
6	Commitment – to listen to stakeholders' views and act on or respond to them
7	Objectivity – an open approach to obtaining stakeholders' views and to interpreting them. Seek to understand views on a range of topics and on all aspects of the business plan, rather than pre-determining their priorities or seeking to endorse your own priorities
8	Transparency – to build stakeholder trust and show that you take their views seriously (incl. how we've considered views, weighted and managed trade-offs)
9	Be inclusive: work with stakeholder groups to gather the fullest range of interests. Understand and balance the differences between different segments. Understand and balance the differences between existing and future stakeholders
10	Be aware that those who often participate i.e. the "usual suspects" are not always representative
11	Be accessible to all (e.g. in consideration of the tasks, timelines, contact person, tech., locations, challenges of communication, etc.)
12	Use targeted approaches to tailor engagement to suit the knowledge and awareness of different groups
13	An ongoing process that is embedded across the business – not just a stand-alone business planning/price control review exercise.
14	Evidence based – use a full range of available sources of info to identify priorities, views and challenges (e.g. operational insight, bespoke research,

15	Gather evidence through a range of methodologies and tools including willingness to pay, qualitative research, surveys, complaints intelligence, market data
16	Be responsive – seek to adopt a flexible process to engagement, responding to the information revealed as the process progresses
17	Demonstrate impact of engagement – ensure that the engagement design process plans for and allows evaluation of success
18	Innovation – trying new and innovative ways of engaging

APPENDIX 6.8 DECISION MAKING FRAMEWORK CHECKLIST

PLAN AND PREPARE	IMPLEMENT & REVIEW	ACT
Clear scope and outcomes defined☒	Triangulate diverse views ☐	Use conclusions to build business plan ☐
Information sources identified ☒	Share outcomes and conclusions ☐	
Unbiased material produced ☒	Evidence to justify conclusions ☐	
Tailored to our diverse stakeholders; targeting those most impacted ☒	Undertake further engagement where required ☒	
Options consistent with our checklist ☒	Articulate where trade offs or no action taken and why ☐	
Ensure inclusivity of views ☒		