

TRIANGULATION OF STAKEHOLDER ENGAGEMENT OUTPUTS: GAS TRANSMISSION

A report for National Grid Gas Transmission

24 September 2019



CONTENTS

Executive Summary	5
1.1 Business Plan and Incentives	5
1.2 Network capability	7
1.3 Asset health, gas on and off and connections	10
1.4 Environment	11
1.5 Cyber and external threats	14
1.6 Whole energy systems	15
1.7 Information provision	18
1.8 Efficient and affordable	19
1.9 Safety	21
1 Introduction	22
2 Methodology	23
1.1 Overview	23
1.2 Step 1: Assess stakeholder engagement material	23
2.1 Step 2: Identify key messages and insights	25
2.2 Step 3: Determine implications for the October Business Plan	29
3 Assessment of stakeholder engagement material	30
3.1 Summary of materials received from NGGT	30
3.2 Engagement types	31
3.3 Analysis of the engagement material	33
3.4 Analysis of desktop research	46
4 Business Plan and incentives	49
4.1 Summary of position in the July Business Plan	49
4.2 Overall acceptability	50
4.3 Incentives	54
5 Network capability	59
5.1 Acceptability of proposals	59
5.2 Information	62
5.3 Risk and trade-offs between priorities	64
6 Gas on and off, asset health and connections	68
6.1 Asset Health	68
6.2 Gas on/off	71
6.3 Connections	73
7 Environment	75
7.1 Overall acceptability	75
7.2 Air quality	90
7.3 Vulnerable consumers	93
8 Cyber and external threats	99
8.1 Summary of position in the July Business Plan	99
8.2 Summary of new findings	99
8.3 Summary of conclusions from the triangulation	101

9	Whole system	103
9.1	Summary of position in the July Business Plan	103
9.2	Acceptability	103
9.3	National Grid's role in leading, facilitating and collaborating	106
9.4	Decarbonisation pathways	108
10	Information provision	116
10.1	Summary of position in the July Business Plan	116
10.2	Summary of new findings	117
10.3	Summary of conclusions from the triangulation	118
11	Efficient and affordable	119
11.1	Summary of position in the July Business Plan	119
11.2	Acceptability	119
11.3	Trade-offs between now and the future	124
11.4	Summary of conclusions from the triangulation	128
12	Safety	129
12.1	Summary of position in the July Business Plan	129
12.2	Summary of conclusions from the triangulation	131
ANNEX A	Desktop research	132
ANNEX A	Desktop research findings	133
ANNEX B	Research questions provided by NGGT	135
ANNEX C	Source material provided by NGGT	136

EXECUTIVE SUMMARY

Frontier Economics was commissioned by National Grid Gas Transmission (NGGT) to draw out robust messages from stakeholder research to inform the October Gas Transmission Business Plan.

The results presented below are based on a systematic triangulation of evidence from desktop research and new primary research carried out by NGGT.

NGGT has collected evidence from a wide range of sources. Each source can provide insights, but also has limitations. By triangulating multiple strands of evidence, we aim to derive robust conclusions on stakeholders' views from a holistic assessment of the entirety of the evidence, even if each element of that evidence base has potential weaknesses and limitations.

1.1 Business Plan and Incentives

1.1.1 Do the overall proposals in the Business Plan meet stakeholder needs?

What new evidence is there on stakeholder views?

The research as a whole points to support for NGGT's proposals and the associated costs.

Consumers and stakeholder indicated that NGGT's proposals generally are acceptable.

- The majority of domestic and non-domestic consumers find NGGT's proposals, along with the associated bill increases, acceptable. However, we note that consumers may find it difficult to comment meaningfully on this, given the very small contribution of NGGT's activities to the overall gas bill and the small change in bill that arises depending on differences in NGGT's proposed plan.
- Domestic and business consumers have indicated that they would support investment all service areas, though we note that the estimated specific level of willingness to pay should be treated with some caution.
- Bilateral engagement also found support among major energy users for the Business Plan proposals, though there was some concern over the potential bill impact for producers.

Is there a consensus among stakeholders?

There is a good degree of consensus in relation to general acceptability of the Business Plan.

How does this compare to the findings described in the July Business Plan?

This supports the findings in the July Business Plan and provides new evidence on support for the proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

It may be useful to present more on the impact of the proposals on non-domestic bills.

How have trade-offs been made in reaching these conclusions?

The evidence suggests that consumers are generally happy with the trade-offs NGGT has made in developing its proposals.

While a concern was expressed by producers on the bill impacts of the proposals, this concern seems to relate more to the need for evidence in this area, rather than an objection to the proposals themselves.

1.1.2 Do our proposals on incentives meet stakeholder needs

What new evidence is there on stakeholder views?

Customers at the [REDACTED] and Ops forums had a set of detailed comments on incentives. In addition, they made the following high level points.

- The expectation is that NGGT should be efficient and economic regardless of incentives. However, there was agreement that NGGT should get incentive rewards for clear outperformance of business as usual expectations.
- There was broad agreement on that incentives were being set in the right areas, and one group also said that the GSO should have an incentive framework.
- There was also general support for symmetrical incentives with caps and collars, with some discussion of the appropriate levels of the caps.

Is there a consensus among stakeholders?

Stakeholders broadly agree with the areas selected for incentives and the cap and collar approach.

One stakeholder did not think there should be an upside on GHGs, but other stakeholders though this could provide a useful incentive.

Some stakeholders could not rank the incentives in terms of importance. One group felt that maintenance was the most important. Another group argued that demand forecasting was less important than residual balancing.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

Stakeholders did not always have a clear view of what would constitute going beyond business as usual and more detail could be provided describing the process for determining this.

More detail could also be provided to justify the size of the proposed caps, including to explain the relativities (e.g. between demand forecasting and residual balancing) and to describe the likely impact on NGGT actions.

More detail could also be provided on the process or required conditions for adjusting targets.

NGGT could also consider responding to the detailed comments made on individual incentives (not reported here).

How have trade-offs been made in reaching these conclusions?

None

1.2 Network capability

1.2.1 Do our proposals on network capability meet stakeholder needs?

What new evidence is there on stakeholder views?

A very high proportion of consumers accept the Business Plan proposals in this area.

Stakeholders, including entry and exit customers, were also broadly supportive of the plans. Specific concerns were raised around flexibility and zonal capacity and the need to consider Net Zero. Some asked for more information on the bill implications.

Is there a consensus among stakeholders?

Yes

How does this compare to the findings described in the July Business Plan?

This new evidence supports the previous findings.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

How have trade-offs been made in reaching these conclusions?

None

1.2.2 Do our metrics give stakeholders useful information on the current and future capability of the gas transmission network?

What new evidence is there on stakeholder views?

Stakeholders are broadly happy with the metrics but have suggested improvements in some specific areas.

Is there a consensus among stakeholders?

Yes, stakeholders broadly like the metrics though they requested new information across different areas.

How does this compare to the findings described in the July Business Plan?

Findings in this area were not reported in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

The Business Plan could set out the areas where further detail may be added to the metrics. It could also mention the plan for ongoing engagement on these metrics.

How have trade-offs been made in reaching these conclusions?

While it may not be cost-effective or feasible to provide all the information requested by stakeholders, the requests should be considered and responded to.

1.2.3 How should we balance the interactions across the three consumer priorities, now and in the future? Are the levels of

risk that consumers are exposed to suitable, now and in the future?

What new evidence is there on stakeholder views?

There is evidence that domestic and non-domestic consumers are prioritising reducing disruption risks over affordability.

- Domestic consumers would generally like at least as much reliability as they have at present and would be happy to pay more for investments in this area.
- Domestic and large and small non-domestic would be happy to pay more in this area for a 1/10,000 reduction in the probability of a supply interruption.
- Major energy users stressed the importance of reliability and have pointed out that there are financial and commercial consequences for them of supply interruptions but have not directly commented on current levels and expected future levels of reliability.

Is there a consensus among stakeholders?

There is some divergence on the trade-offs domestic consumers are making between reliability and affordability. A significant proportion of domestic consumers prefer to maintain current disruption risk levels, while a slightly larger proportion prefers to pay more for more secure supply.

How does this compare to the findings described in the July Business Plan?

This new evidence supports the previous findings.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

In light of additional evidence that a significant share of stakeholders would prefer a reduction of disruption risk, NGGT might want present further information on the costs associated with decreasing the risk of supply interruptions.

How have trade-offs been made in reaching these conclusions?

The evidence suggests that stakeholders are supportive of at least as much investment in to reduce risk as was described in the July Business Plan. While it could be argued that NGGT should go further to reduce disruption risk, there is limited evidence suggesting that stakeholders are unhappy with the current levels of risk.

1.3 Asset health, gas on and off and connections

1.3.1 Do our proposals meet your needs in relation to asset health

What new evidence is there on stakeholder views?

There is broad support from domestic customers for the proposed plans on maintaining pipes and equipment and for the proposed actions to decommission redundant sites.

How does this compare to the findings described in the July Business Plan?

This reinforces the findings in the July Business Plan and provides new evidence that consumers find NGGT's plans for maintenance of existing assets acceptable.

Are there particularly diverse views or a consensus?

There is a consensus that stakeholders accept the proposed actions from the July Business Plan, but a significant proportion of consumers are not happy with the consequences for bills.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

How have trade-offs been made in reaching these conclusions?

Consumers are trading off cost and outcomes in this area, but the majority are happy with NGGT's proposals.

1.3.2 Do our proposals meet stakeholder needs in relation to gas on/off?

What new evidence is there on stakeholder views?

The majority of domestic consumers accept NGGT's proposals in this area, though a significant proportion (around a quarter) do not accept the costs.

How does this compare to the findings described in the July Business Plan?

This provides new information on the views of domestic consumers in terms of their support for NGGT's proposed investments and suggests that costs in this area remain important.

Are there particularly diverse views or a consensus?

There is only one piece of evidence directly relating to gas system operation.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

How have trade-offs been made in reaching these conclusions?

Consumers are trading off cost and outcomes in this area, but the majority are happy with NGGT's proposals.

1.4 Environment

1.4.1 Do our proposals meet stakeholder needs?

What new evidence is there on stakeholder views?

The majority of domestic consumers find the July Business Plan proposals relating to environment and communities, and the associated bill increases acceptable. A significant proportion (around a fifth to a quarter) accept the proposals but not the bill increases.

This is backed up by the general finding that improving the environment (air quality, carbon emissions, local community and the environment) is very important for domestic consumers.

Non-domestic consumers see action on climate change as particularly important and major energy users noted that there was a societal obligation for action on methane.

Supporting the local community is of importance to stakeholders. However, views are not consistent across all stakeholder groups and evidence collected. Domestic consumers tender to support it, while other stakeholders offer less support.

Community schemes are considered generally considered less important by stakeholders (including domestic consumers) than initiatives to improve the environment. However domestic and non-domestic consumers are willing to pay more in this area.

Ideas supported by domestic consumers on ways NGGT can help the public resulted in suggestions similar to those currently employed / proposed by NGGT in the Business Plan.

The majority of domestic consumers believe that costs for NGGT's charity and community work should be shared between NGGT and customers. However, a small proportion of consumers also believe that costs should be borne entirely by NGGT.

Are there particularly diverse views or a consensus?

There is a consensus that action on environment and communities are important priorities. There are mixed views among consumers on the acceptability of bill increases.

Domestic and non-domestic consumers make different trade-offs between protecting the local environment and reliability and affordability. While domestic consumers gave protecting the local environment the highest priority, non-domestic consumers considered it as relatively less important.

How does this compare to the findings described in the July Business Plan?

This is in line with the stakeholder findings reported in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No major changes. More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

It may also be useful to set out where there are differences in views between domestic and non-domestic consumers.

How have trade-offs been made in reaching these conclusions?

Stakeholders care about protecting the environment and the majority accept the trade-offs NGGT is making between cost and action in this area.

Since a significant proportion of domestic consumers do not accept the associated bill increases, any further actions stakeholders take in this area would need to be carefully justified as cost-effective.

1.4.2 How important is it for us to tackle the issue of air quality?

What new evidence is there on stakeholder views?

Domestic consumers consider air quality to be important and the majority agree with the proposed investments and its bill impact. A significant proportion (around a quarter) agree with the proposals, but not with the bill impact. There is also some support from domestic consumers for doing more on air quality than currently proposed, but specific actions are not specified.

Other stakeholders did not address this directly:

- Major energy users stressed the importance of keeping options open, in relation to compressors and concerns were expressed on the implications for constraints.
- [REDACTED] requested further information on some specific sites but did not comment more generally.

Are there particularly diverse views or a consensus?

There is a consensus that action in this area is important. There are mixed views among consumers on the acceptability of bill increases.

How does this compare to the findings described in the July Business Plan?

The new evidence is broadly in line with the stakeholder evidence findings described in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

NGGT could include more evidence on why the costs of action in this area are efficient.

How have trade-offs been made in reaching these conclusions?

The new evidence generally supports the actions set out in the July Business Plan. There is some support for going further. However, a significant proportion of consumers are not happy with the bill impact. Given the strong emphasis received on cost-effectiveness from stakeholders for the July Business Plan, National Grid should only go beyond the measures set out in the July Business Plan where further cost-effective options are available.

1.4.3 What is the role for NGGT for vulnerable consumers (current and future)?

What new evidence is there on stakeholder views?

Domestic consumers are willing to pay a small additional amount to help fuel poverty. While most consumers and stakeholders agree that this is an important issue, many feel acting to help fuel poverty is not the responsibility of NGGT. This view is particularly strong among non-domestic consumers and major energy users.

Are there particularly diverse views or a consensus?

Consumers see this as an important area, but generally do not consider this as a high priority investment area for NGGT. However, domestic consumers are willing to pay a small amount to alleviate fuel poverty, while other stakeholders are not.

Both domestic consumers and other stakeholders agree that this area should receive support from other members in the industry (government, regulatory, network companies, etc.).

How does this compare to the findings described in the July Business Plan?

This reinforces the view in the July Business Plan and provides new information on consumer views on fuel poverty.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are required, but NGGT could document the divergent views between domestic and non-domestic customers.

How have trade-offs been made in reaching these conclusions?

None.

1.5 Cyber and external threats

1.5.1 Do our proposals meet stakeholder needs in relation to cyber and external threats?

What new evidence is there on stakeholder views?

The majority of consumers accept NGGT's investment proposals to protecting the system from external hazards, along with their associated costs. However, the majority accepting this is significantly lower than for other areas, including for safety. More than a third of consumers accepted the proposals but did not accept the bill increase.

A significant proportion of respondents also responded 'no' or 'unsure' to a hypothetical willingness to pay question that related specifically to cyber security.

Is there a consensus among stakeholders?

35% of consumers were accepted the proposals to protect the system from external threats but were not willing to pay more. Discussion in the focus groups suggested that this may be because consumers see this as a basic requirement of NGGT, rather than something they should pay extra for.

How does this compare to the findings described in the July Business Plan?

This evidence reinforces the view that consumers see this area as important and adds additional evidence on the consumer acceptability of the specific proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are justified.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with the safety investments. However, given these investments are driven primarily by the need to comply with legislation there is not a case for reconsidering them.

1.6 Whole energy systems

1.6.1 Do our proposals meet stakeholder needs on whole energy systems?

What new evidence is there on stakeholder views?

The majority of domestic consumers accept the proposals and would be happy to accept a small bill increase in return. However, a significant proportion (around a quarter) accept the proposals, but not the bill increases.

This is consistent with UKERC research¹, which finds that consumers would be willing to pay more for 'increasing low carbon energy'.

Stakeholders are keen to know NGGT's plans on net zero targets and would like to see a discussion of this in the business plan. They have asked NGGT to provide a clearer explanation of how their plan fits (or not) with the delivery of net zero, following recent legislation.

Is there a consensus among stakeholders?

A significant proportion of stakeholders state that these proposals only 'somewhat' meet their needs. Some stakeholders said that there is not enough detail / too much uncertainty to be sure, and some stakeholders think National Grid could be doing more.

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

New evidence is now available that shows that consumers and stakeholders are generally supportive of the proposals in this area.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

It is not clear that major changes to the proposals are required. There is broad stakeholder support for the actions NGGT has proposed.

However, stakeholders are keen to know NGGT's plans on net zero targets and would like to see a discussion of this in the business plan. This could include a presentation of the feasibility of current proposals under a net zero scenario, NGGT's transition plans to achieve carbon neutrality and the cost of such a transition including the impact on consumers.

¹ <http://www.ukerc.ac.uk/publications/paying-for-energy-transitions.html>

If NGGT were to consider that aspects of its plans may impede future progress towards net zero, then the latest round of stakeholder feedback suggests that changes should be made.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with NGGT's proposals on net zero. However, there is strong support generally for action in this area from a wide range of stakeholders.

1.6.2 What are your views on what we are leading, facilitating and collaborating on?

What new evidence is there on stakeholder views?

The engagement indicates that overall, stakeholders are supportive of National Grid's proposals, though some said that there is not enough detail / too much uncertainty to be sure.

Some stakeholders are also keen to see National Grid involved in various specific research topics, including hydrogen, CCS, the future of the network in 20-40 years, and the future role of LNG.

Is there a consensus among stakeholders?

These issues were only mentioned by a small number of stakeholders.

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

National Grid might consider responding to some of the concrete initiatives mentioned by stakeholders to its proposals.

How have trade-offs been made in reaching these conclusions?

None

1.6.3 What is important for stakeholders for us to consider when we are investigating the different decarbonisation pathways?

What new evidence is there on stakeholder views?

Domestic consumers support NGGT's role in working with other organisations to make the overall gas system cleaner and the majority are willing to pay more on their bills for this. Domestic consumers also support "Innovation projects to trial greener alternatives to natural gas" and are willing to pay more for this.

Stakeholders (major energy users and a consumer body) agreed that NGGT needs to take a leading, coordinating role in whole energy systems.

Stakeholders are requesting further clarity from NGGT on its net zero plans – the trajectory envisioned and the cost to implement changes and do more in this area

Other stakeholders expressed the view that it is important to keep options open, rather than choosing a specific option (e.g. hydrogen).

National Grid investors agree that NGGT has an important role to play in decarbonisation and it is well positioned to support initiatives in this area.

Is there a consensus among stakeholders?

A significant proportion (around a quarter) of domestic consumers accept these proposals but are not willing to pay more.

A significant proportion of other stakeholders state that these proposals only 'somewhat' meet their needs. Some stakeholders said that there is not enough detail / too much uncertainty to be sure, and some stakeholders think National Grid could be doing more.

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

New evidence is now available that shows that consumers and stakeholders are generally supportive of the proposals in this area.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

As described above, where possible, more detail on the proposed actions should be provided. It may also be useful to respond to some of the specific suggestions on areas of focus.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with NGGT's proposals on net zero. However, there is strong support generally for action in this area from a wide range of stakeholders.

1.7 Information provision

1.7.1 Do our proposals meet your needs?

What new evidence is there on stakeholder views?

Stakeholders did not comment directly on the acceptability of NGGT's proposals in this area. The new evidence confirms that the data provided by NGGT is useful in some major energy users' day-to-day operations.

Some stakeholders would like data to be provided with greater frequency or more detailed information.

The survey suggests that not all major energy users are aware of NGGT's data provision.

Is there a consensus?

A variety of views were collected from the stakeholders consulted.

How does this compare to the findings described in the July Business Plan?

The findings are broadly aligned with proposals in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

Given the relatively low degree of awareness about NGGT's data provision, NGGT could consider options to improve their communication with stakeholders about information provision.

How have trade-offs been made in reaching these conclusions?

Given the data is useful for some customers and energy industry participants, there is a good case for NGGT to continue providing it. However, the data is not useful to all those surveyed. To maximise the benefit of this provision, it may make sense to NGGT ensure relevant stakeholders are aware of what is offered.

1.8 Efficient and affordable

1.8.1 Do our proposals meet stakeholder needs?

What new evidence is there on stakeholder views?

The evidence suggests that domestic and non-domestic consumers find the increase in the bill associated with the proposals in the July Business Plan to be acceptable.

Business consumers (small and micro) and domestic consumers also view NGGT's services as providing value for money. However, we note that consumers may find it difficult to comment meaningfully on this, given the very small contribution of NGGT's activities to the overall gas bill.

The fact that consumers (domestic, and small and large non-domestic consumers) are willing to pay more across a range of service areas, suggests that NGGT's proposals are affordable.

Affordability remains important for domestic consumers. However, consumers do not necessarily view affordability as NGGT's responsibility. For example, they may see this as being more the responsibility of suppliers.

Affordability is also important to major energy users, and they suggested that greater emphasis is placed on communicating the bill impact of changes for non-domestic users.

Is there a consensus?

Yes.

How does this compare to the findings described in the July Business Plan?

- These findings reinforce the conclusions that:
 - affordability is important for consumers; and
 - consumers are generally happy with NGGT's performance in this area.
- The fact that they find the bill increase associated with the proposals in the July Business Plan to be acceptable is new information that supports the July draft.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes to the Business Plan are recommended, though it may be useful to present more information on cost impacts for non-domestic customers, where possible.

However, it may be useful to test the conclusion on affordability, using a different metric to annual bill increases. For example, the total cost could be presented to consumers, and compared to the cost of representative investments in education or health.

How have trade-offs been made in reaching these conclusions?

It is clear on the one hand that consumers and stakeholders are very concerned about affordability, and on the other hand that they are generally happy with NGGT's performance in this area. The overall conclusion is that consumers and stakeholders are accepting of NGGT's proposals in this area.

1.8.2 How should we balance the costs between current and future consumers?

What new evidence is there on stakeholder views?

When asked about who should pay for the costs of the energy transition, a significant majority of stakeholders said it should be current consumers.

Domestic consumers also have a strong preference for costs for asset demolition and new gas equipment to be borne by current consumers. They hold this view on the understanding that this would mean that gas bills today will go up, but gas bills in the future will go down. This could be interpreted as support for a reduced depreciation period. They cited fairness as a driver for this view.

In contrast, major energy users expressed concerns about a potential shift of greater costs to current consumers. In particular, they were concerned about the impact that any reduction in the depreciation period could have, given that this would shift costs more costs on to current consumers.

Is there a consensus?

There is some divergence with respect to the ideal split of costs between future and current consumers. Major energy users had concerns about transferring more costs to current consumers. Other stakeholders and domestic consumers felt that current energy consumers should pay more for costs that are being incurred now.

How does this compare to the findings described in the July Business Plan?

This provides new information on consumers preferences on the split of costs between current and future consumers.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes.

How have trade-offs been made in reaching these conclusions?

Domestic consumers believe it is fair for them to bear the costs of current assets and the energy transition. While affordability concerns for major energy users should be considered, the views of domestic consumers could be given more weight on a question related to intergenerational fairness.

1.9 Safety

1.9.1 Do our proposals meet stakeholder needs?

What new evidence is there on stakeholder views?

The majority of domestic consumers accept NGGT's Business Plan proposal and the associated bill increase, though a significant proportion of domestic consumers (19%) did not find the bill impact acceptable.

For 16% of domestic consumers and 25% of non-domestic consumers, safety and reliability was their main reason for supporting the Business Plan.

Consumers also indicate that health and safety is an important area for asset replacement.

Is there a consensus among stakeholders?

There is strong consensus on the importance of safety.

How does this compare to the findings described in the July Business Plan?

This reinforces the existing view that safety is a priority for stakeholders. It also adds new information on the acceptability of the July Business Plan proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are required.

How have trade-offs been made in reaching these conclusions?

Given these investments are driven primarily by the need to comply with legislation there is not a case for reconsidering them.

1 INTRODUCTION

Frontier Economics was commissioned by National Grid Gas Transmission (NGGT) to draw out robust messages from stakeholder research that can inform the October Gas Transmission Business Plan.

To draw out these messages, we have systematically triangulated evidence from desktop research and new primary research carried out by NGGT. This report describes our approach to the triangulation and presents a summary of stakeholder views on each of the key Business Plan topics.

The remainder of this report is structured as follows.

- Section 2 describes our methodology for the assessment.
- Section 3 presents an overview of the material considered.
- The remaining sections set out our analysis and conclusions by topic.
- The research questions provided by NGGT are set out in Annex A.

2 METHODOLOGY

This section describes the methodology that we have used to triangulate stakeholder evidence.

1.1 Overview

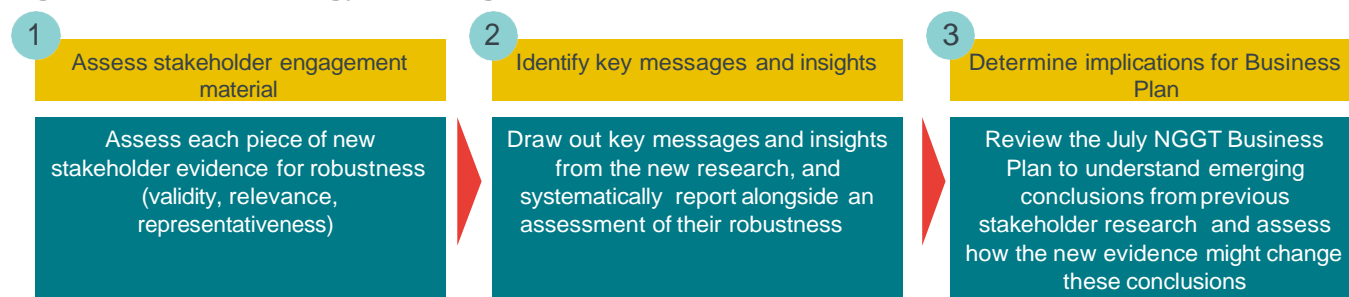
The triangulation exercise we have undertaken aims to allow systematic assessment of the stakeholder engagement that has been carried out by NGGT since the development of the July Business Plan. The intention is to either:

- validate the conclusions drawn in the July draft and confirm they remain valid in the light of the recent round of stakeholder feedback; or
- identify where changes are needed given new evidence and the evidence base as a whole.

To draw out insights robustly across a diverse set of engagement outputs, stakeholder and topics, we developed a methodology that could be applied consistently and systematically.

Figure 1 presents an overview of the methodology. Further detail on each step is provided below.

Figure 1 Methodology for triangulation



Source: Frontier Economics

1.2 Step 1: Assess stakeholder engagement material

The first step of our analysis was to assess each piece of engagement output material provided by National Grid, to determine how confident we could be in its findings. The full list of engagement material is provided in Annex B.

The engagement material is diverse across a number of dimensions:

- **Methodologies employed.** These include focus groups, webinars, one to one engagement, cultural research, the use of a slider tool and a detailed willingness to pay assessment.
- **Topics covered.** Topics covered include those of general interest to consumers, such as environment, safety, reliability and affordability, and more technical topics such as information provision, which are most relevant to customers, or those who are closely engagement in the sector.

- **Stakeholder categories.** The engagement has been broad in terms of coverage. Twelve groups, mapped and segmented by NGGT are shown in Figure 2.

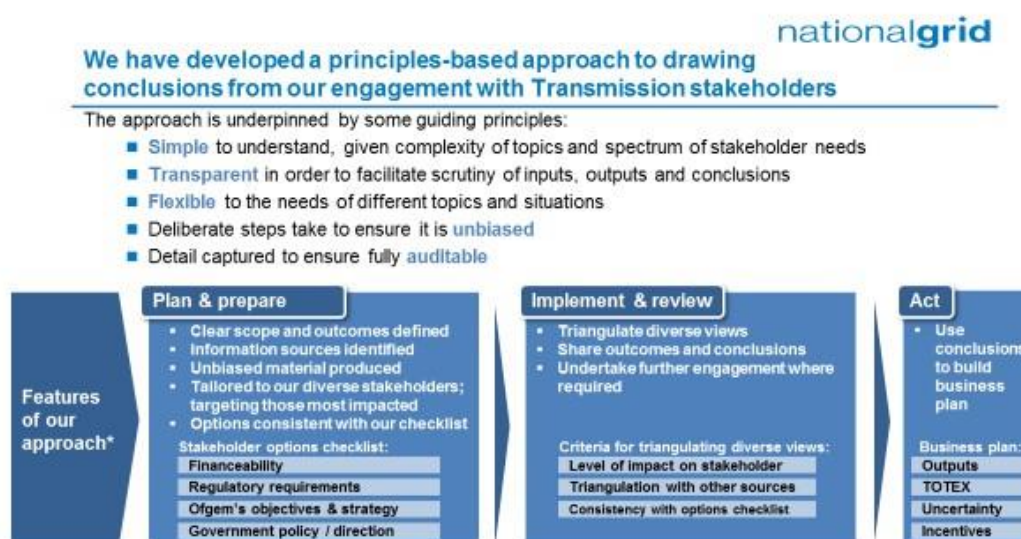
Figure 2 Stakeholder groups.

Consumer interest group – organisations that represent consumer interests	Consultant/ supply chain – external organisations that provide professional advice/services/goods	Customer (entry) – firms that extract natural gas and provide gas to the transmission network	Customer (exit) – organisations that use considerable amounts of gas and are connected to the transmission network
Customer (shipper) - firms that buy and sell gas to consumers	Energy network operator – companies that operate or own networks	Env interest group – organisations that represent environmental interests	Gas distribution network – firms that operate and own networks that deliver gas to consumers
Industry/ trade body – organisations that represent a specific industry	Other energy industry – firms that operate in the energy industry	Other non-energy industry – firms that operate in non-energy related industries	Regulator/ Government – a body that supervises our activities
University/ think tank – academic institutes that carries out research or are thought leaders	Major energy user – organisations that use considerable amounts of gas and are not connected to the network	Domestic consumers – household consumers in Great Britain	Non-domestic consumers – non-household consumers in Great Britain

Source: NGGT

Given this diversity, it was particularly important develop and apply a systematic approach to determining the degree of confidence that could be associated with each output. We therefore assessed each piece of material against a set of criteria (described in Figure 4), developed with reference to NGGT’s principle-based approach (Figure 3).

Figure 3 National Grid’s principles-based approach



*adapted from AA1000 stakeholder engagement standard to work for Transmission Enhanced Engagement

Source: National Grid

Figure 4 Criteria

1	2	3
Relevance	Representation	Validity
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Which stakeholders have been involved in the research (customers/consumers/who else?)	Did the options presented comply with the NGGT checklist?
Which research questions/topics are addressed?	What degree of impact could NGGT's actions have on these stakeholders?	Can stakeholders meaningfully comment on the options (or are they for example purely technical questions)?
	Is the sample robust, in terms of size and representation?	Were stakeholders well informed?
		Were questions presented in a way that minimises bias?

Source: Frontier Economics

This assessment informed Step 2: the identification of key messages. In particular, any issues with robustness are noted, so as to ensure that the relative strength and importance of each source of evidence can be understood.

2.1 Step 2: Identify key messages and insights

NGGT provided Frontier with around 30 research questions to consider (Annex A). It also provided the July Business Plan, containing the conclusions that had been drawn from stakeholder engagement to date at that time across eight topics, along with the resulting proposals for actions.

Figure 5 groups the research questions against the conclusions from previous stakeholder research. In our triangulation, we used this table:

- to ensure we focused on NGGT's priority areas of research within each topic; and
- to understand the additionality of the new stakeholder research, in particular, whether it:
 - it is a new area that hasn't already been covered;
 - it reinforces the July Business Plan conclusions on "what stakeholders are telling us" (and potentially adds more detail); or
 - it challenges the July Business Plan conclusions on "what stakeholders are telling us".
-

Figure 5 NGGT: What we’ve heard from stakeholders and research questions

Priority	A summary of what we’ve heard	New research questions provided by NGGT
Overall		<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ How should we balance the trade-offs across the 3 consumer priorities now and into the future? ■ How should we balance cost and risk between current and future consumers? ■ How acceptable is our plan to you? ■ Are you happy with our draft proposals for incentivisation during our next price control?
I want the gas system to be safe	<ul style="list-style-type: none"> ■ Safety is of paramount importance to our stakeholders ■ Stakeholders expect us to meet legislative compliance and keep the public safe. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ Was there anything further you were expecting?
I want you to move gas on and off the transmission system where and when I want	<ul style="list-style-type: none"> ■ Customers and stakeholders value the reliability the gas transmission system has provided ■ Any change to this would have significant impacts to their commerciality ■ Due to uncertainty in the future, stakeholders want us to maintain flexibility by keeping options open, allowing them to adapt their strategies where needed ■ Consumers take for granted an uninterrupted, safe gas supply. It is sacrosanct. It gives them peace of mind, allowing them to focus on other things ■ Stakeholders have told us they expect flows past 2040 and that Bacton is critical to their operations ■ Stakeholders generally believe we should take a risk-based approach to mitigation against environmental impacts to our network. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ Was there anything further you were expecting? ■ Do our metrics give you useful information on the current and future capability of the gas transmission network? ■ Are the levels of risks that consumers are exposed to suitable now and in the future? ■ Would you want any additional information to help you decide if you support our business plan? ■ How should we balance the interactions across the 3 consumer priorities now and in the future? ■ How should we balance cost and risk between current and future consumers? ■ Do stakeholders support the delivery of stand-alone projects in RIIO-2 that have been shown to be cost beneficial compared to an ongoing asset health approach? i.e. Bacton
I want you to protect the transmission system from cyber and external threats	<ul style="list-style-type: none"> ■ Stakeholders are aware of - and concerned about - the growing threat from cyber-attacks and are keen for us to minimise the impact of any such attacks on them ■ Stakeholders recognise this is an area that will require innovation. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs?

Priority	A summary of what we've heard	New research questions provided by NGGT
I want you to care for the environment and communities	<ul style="list-style-type: none"> ■ Our focus on monitoring and reducing emissions should expand across our entire network including construction, methane leaks and non-operational emissions of our business ■ Stakeholders want us to demolish assets on a risk-based approach, sharing the cost between current and future consumers ■ All alternative uses for the assets, in particular pipelines, should be considered before demolition. ■ Stakeholders and consumers see the value of environmental stewardship and encourage us to continue. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ Was there anything further you were expecting? ■ How important is it for us to tackle the issue of air quality? ■ What do you think NGGT's role should be in delivering net zero targets? Including how to ensure "fairness" in decarbonising heat. ■ What is the role of NGGT for vulnerable consumers (current and future)?
I want you to facilitate the whole energy system of the future – innovating to meet the challenges ahead	<ul style="list-style-type: none"> ■ Innovation is critical to get to a decarbonised energy system ■ The energy system should work collaboratively to address the problem. This may benefit from an incentive ■ There is a general consensus that whole energy systems thinking will deliver consumer benefits but also recognition that it won't be easy to measure this ■ Gas can deliver an affordable transition to a decarbonised energy system with minimal disruption to consumers ■ It is vital to engage with consumers on this very complex topic. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ Was there anything further you were expecting? ■ What are your views on what we are leading, facilitating and collaborating on? ■ What is important to stakeholders for us to consider when we are investigating the different decarbonisation pathways?
I want all the information I need to run my business, and to know what you do and why	<ul style="list-style-type: none"> ■ Stakeholders rely on the information and data we provide and use it to plan their business activities both operational and strategically ■ The energy landscape is complex and getting more so ■ Consumers are very confused about energy but are interested to find out more. 	<ul style="list-style-type: none"> ■ Do our proposals meet your needs? ■ Was there anything further you were expecting?
I want to connect to the transmission system	<ul style="list-style-type: none"> ■ Stakeholders would like greater visibility of capacity for new connections across the Gas Transmission System to allow an easier assessment of potential connection locations ■ CLoCC has implemented a number of good changes to the connections system but these need to be rolled out further ■ Connecting smaller, unconventional parties to the Gas Transmission System will play a key part in decarbonising the energy system. 	<ul style="list-style-type: none"> ■ Does our draft plan address your needs of us for the RIIO-2 period?

Priority	A summary of what we've heard	New research questions provided by NGGT
I want you to be efficient and affordable	<ul style="list-style-type: none"> Stakeholders want more transparency and predictability on costs and would welcome metrics or greater visibility of this Stakeholders would welcome greater visibility of our strategy and plans to allow: <ul style="list-style-type: none"> The supply chain to efficiently cater for needs Greater innovation across the supply chain There is a lot of uncertainty, confusion and distrust around energy bills. Consumers aren't engaged about who they're paying for what. Once roles and responsibilities are explained, consumers believe we deliver value for money There is a real mix of views on the right length of time to assess our plans against, due to the uncertainties around the future decarbonisation of the energy system. 	<ul style="list-style-type: none"> Do our proposals meet your needs?

Source: NGGT

For each message/insight identified, we then systematically answered a set of questions (Figure 6).

The outputs of this exercise are contained in each of the topic chapters (from Section 4).

Figure 6 Identification of insights



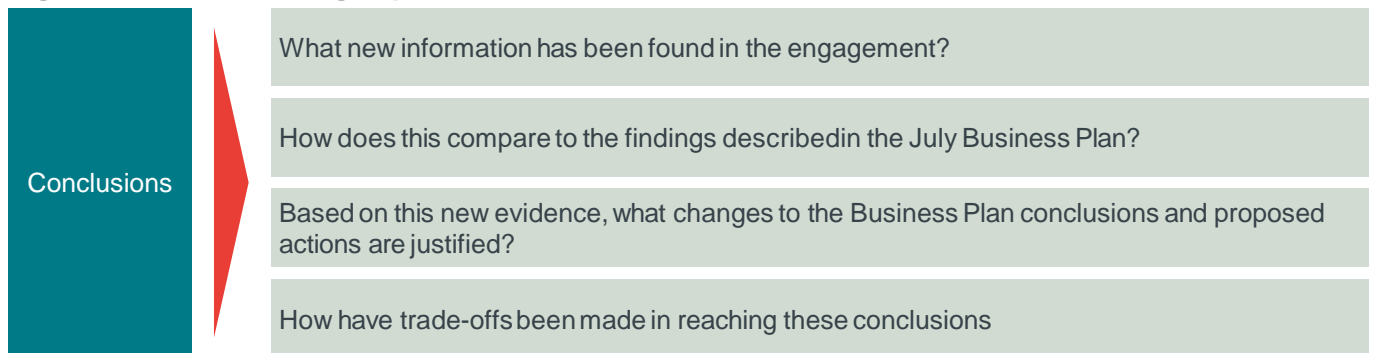
Source: Frontier Economics

2.2 Step 3: Determine implications for the October Business Plan

The final stage of the triangulation was to determine the implications for the October Business Plan.

In order to do this, we considered two questions for each new key message coming out of the triangulation (Figure 7).

Figure 7 Determining implications



Source: Frontier Economics

The outputs of this exercise are contained in each of the topic chapters (from Section 4).

3 ASSESSMENT OF STAKEHOLDER ENGAGEMENT MATERIAL

This section presents an overarching assessment of the stakeholder engagement material (Step 1 of the analysis described in Section 2 above).

- We first categorise the material by engagement type and describe the types of findings that can be robustly drawn from each engagement type.
- We then present our analysis of the engagement material against each of our criteria: These are:
 - Relevance
 - Representativeness
 - Validity

3.1 Summary of materials received from NGGT

Figure 8 describes the material received from NGGT and reviewed for this work. A full list of documents is included in Annex B.

Figure 8 Key primary research material received from NGGT

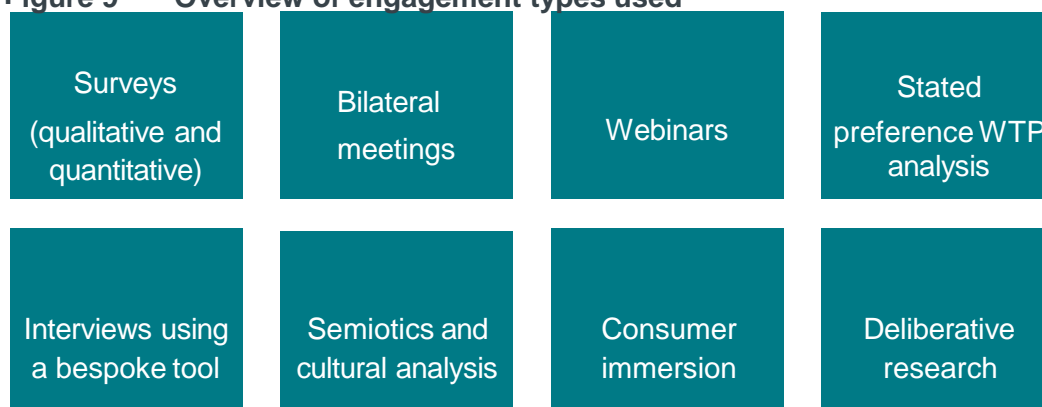
Title	Type of research	Stakeholders
Estimating Electricity and Gas Transmission Consumers' Willingness to Pay for Changes in Service during RII02	Stated preference WTP analysis	Domestic and non-domestic consumers
Consumer immersion workshop – results from table exercises	Consumer Immersion (focus groups)	Domestic consumers
Major users survey	Qualitative survey	Major energy users
Understanding Reliability - Cultural Analysis for National Grid	Cultural analysis	Not applicable
Responsible & Sustainable Business in the UK - Cultural analysis for National Grid	Cultural analysis	Not applicable
Investor survey	Qualitative survey	National Grid investors
Pay now / pay later - Gas asset management research	Deliberative research (focus groups)	Deliberative research on asset management
Acceptability Report- Phase 1	Focus groups and interviews	Domestic and non-domestic consumers
Acceptability Report Phase 2	Quantitative survey	Domestic and non-domestic consumers
October build engagement capture and other bilaterals	Bilateral meetings	Industry/trade bodies; Regulator/government/ Environmental interest group
Network capability polls	Webinars	Customer (entry); Customer (exit); Government/regulator; Shipper; Consultant; Supply chain; Environment Interest group; Think Tank; Other Energy Industry; Industry Trade Body
National Grid Service Valuation Research Results	Interviews with bespoke tool	Domestic consumers
Our role in an uncertain energy future (Net zero)	Webinar	Energy network owner or operator; Gas Distribution network; Customer (Shipper/Supplier); Regulator or government; Supply chain or consultant; Industry or trade body; Other energy industry; Other non-energy industry
Responsible Procurement Plan	Webinar	Customer (exit); Government/regulator; Shipper; Consultant; Supply chain; Think Tank;

Source: Frontier Economics

3.2 Engagement types

NGGT has used a broad range of engagement types (Figure 9).

Figure 9 Overview of engagement types used



Source: Frontier Economics

This diversity of sources strengthens the evidence base for triangulation. This is because each source can provide insights, but also has limitations (Figure 10). Therefore, even if a particular methodology has some limitations in terms of robustness, it is still generally possible to draw in insights as part of a triangulation process. By triangulating multiple strands of evidence, it is hoped to derive robust conclusions on stakeholders’ views from a holistic assessment of the entirety of the evidence, even if each element of that evidence base has potential weaknesses and limitations. It therefore makes sense to draw insights from a range of sources, rather than overly relying on just one source or methodology.

Figure 10 Strengths and limitations of engagement materials

	Strengths	Limitations
Surveys	<ul style="list-style-type: none"> Can provide quantitative estimates of stakeholder views. Can be structured to be statistically robust (e.g. covering representative populations). 	<ul style="list-style-type: none"> It may be difficult to cover complex and unfamiliar topics. It can be difficult to understand why respondents have answered as they have done. Respondents’ ability to answer meaningfully may be limited by a number of factors, including the experiences that they have had. For example, since most consumers receive uninterrupted and safe gas services, they may find it difficult to respond to questions asking them to think about changes to safety and reliability.
Bilateral meetings	<ul style="list-style-type: none"> Very useful for understanding the views of consumers that will be highly impacted by proposals and that have the resources to engage, such as large companies, or those represented by industry bodies, charities or think tanks. 	<ul style="list-style-type: none"> Time-intensive for stakeholders, so not all stakeholders may have the resources to engage. This may lead to bias. As above, respondents’ ability to answer meaningfully may be limited by the experiences that they have had, which may not be generally representative of aggregate customer experiences.

	Strengths	Limitations
Webinars	<ul style="list-style-type: none"> Very useful for understanding the views of large companies, or those represented by industry bodies, charities or think tanks 	<ul style="list-style-type: none"> Time-intensive for stakeholders, so not all stakeholders may have the resources to engage. This may lead to bias. Quantitative findings need to be treated with care, given selection bias. As above, respondents' ability to answer meaningfully may be limited by the experiences that they have had.
Stated preference (willingness to pay)	Can help provide understand trade-offs and relative preferences of consumers for different outcomes.	<p>The specific monetary estimates should generally be treated with caution. This is because even well-designed analysis can be limited by a number of biases. For example:</p> <ul style="list-style-type: none"> Faced with complex choices, people are likely to simplify any problem they are presented with that they don't know about. For example, people will tend to choose the status quo, or use a rule of thumb such as always going for the cheapest option. People do not want to lose the service they have now, so they tend to weight small probabilities very highly. As above, respondents' ability to answer meaningfully may be limited by the experiences that they have had.
Interviews, using a bespoke tool	<ul style="list-style-type: none"> Can help understand stakeholders' views on complex or relatively unfamiliar topics Can be structured to be statistically robust (e.g. covering representative populations) 	<ul style="list-style-type: none"> As above, respondents' ability to answer meaningfully may be limited by the experiences that they have had.
Semiotics and cultural analysis	<ul style="list-style-type: none"> Useful for helping a company understand where they sit within culture, what stories they are communicating to consumers and how they could develop further. 	<ul style="list-style-type: none"> Does not provide direct insight into stakeholders' views.
Focus groups/ Consumer immersion/ deliberative analysis	<ul style="list-style-type: none"> Can provide new insights on areas that would previously have been blind spots. 	<ul style="list-style-type: none"> It can be difficult to make robust conclusions on attitudes and drivers. The group discussion can introduce a number of biases (e.g. unintentional priming by the moderator, responses driven by a need for social acceptability). Sample size is generally too small to draw a statistically robust conclusion. As above, respondents' ability to answer meaningfully may be limited by the experiences that they have had.

Source: Frontier Economics

3.3 Analysis of the engagement material

NGGT presented us with several pieces of engagement material within each category.

We now present a high-level assessment of the robustness of each piece of material. As noted above, these assessments should be seen in the context of there being strengths and weaknesses associated with all types of engagement.

We present these assessments against material in the following categories

- Surveys;
- Bilateral meetings;
- Webinars;
- Stated preference (willingness to pay);
- Interviews, using a bespoke tool;
- Semiotics and cultural analysis; and
- Focus groups/Consumer immersion/deliberative research

3.3.1 Surveys

Quantitative survey

NGGT commissioned a quantitative survey focussed on determining the acceptability of key Business Plan proposals. The survey was undertaken in summer 2019. It involved presenting the key investment proposals in the Business Plan to consumers along with their individual bill impacts. Consumers were asked their views on the individual elements of the plans; and the overall plan and total bill impact. Focus group analysis informed the design of the survey, and the design of the survey was tested through face-to-face 'cognitive interviews'.

Figure 11 presents our assessment of the robustness of this source. This illustrates that this generally was generally a relevant and representative survey, though there are some issues with validity.

Figure 11 Quantitative survey: Assessment of robustness

Acceptability survey	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Overall Business Plan ■ Gas on/off/Network Capability/Asset Health ■ Environment and communities ■ Whole Energy Systems ■ Efficient and affordable ■ Safety ■ Cyber and external threats ■ Information provision
Representation	
Which stakeholders have been involved in the research?	Domestic and non-domestic consumers
What degree of impact could NGGT's actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	<p>936 domestic respondents from England, Wales and Scotland. 163 non-domestic respondents.</p> <p>Nationally representative in terms of key consumer characteristics (e.g. age, socio-economic group; or business size and sector).</p>
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	<p>Yes – the questions were all relevant to consumers. However, we note that it may be difficult for consumers to comment on aspects of service that they have not experienced (e.g. reduced reliability).</p> <p>NGGT's cost to consumers is a very small number when contrasted with the overall energy bill. This may make it difficult for consumers to comment meaningfully on bill impacts.</p>
Were stakeholders well informed?	<p>The surveys were tested using cognitive interviews. This showed that most people found the survey topics interesting and informative. Overall, the respondents demonstrated good understanding of the purpose of the survey and what they were being asked to do.</p> <p>Survey evaluation questions such as "I was given time and opportunity to get my views across" and "my input was respected and valued" received a majority of strongly positive responses.</p>
Were questions presented in a way that minimises bias?	Showcards used are factual and don't appear to be leading.

Source: *Frontier Economics*

Qualitative surveys

National Grid also provided us with the outputs of two qualitative surveys.

- **Investor survey.** A qualitative independent survey carried on National Grid shareholders.
- **Major energy users survey.** A qualitative survey of around 60 major energy users about their needs for reliability of service and a few questions about how they use the data provided.

Figure 12 presents our assessment of the robustness of the qualitative surveys. This illustrates that these surveys provide relevant and valid information, though they are not likely to be representative.

Figure 12 Qualitative surveys: Assessment of robustness

	Investor survey	Major energy users survey
Relevance		
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes	Yes
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ▪ Whole Energy System 	<ul style="list-style-type: none"> ▪ Gas on/off ▪ Information provision
Representation		
Which stakeholders have been involved in the research?	National Grid shareholders	Customers (shippers); Customers (connected); Governmental; Other Major Energy Users
What degree of impact could NGGT’s actions have on these stakeholders?	High	High
Is the sample robust, in terms of size and representation?	<p>30 organisations were targeted by the independent contractor [REDACTED]. These organisations were based on a cross-section of investors (from top 10 to those owning less than 0.1% and institutions who don’t hold shares with us; worldwide, UK and UK).</p> <p>18 shareholders responded.</p>	<p>The survey was sent to all [REDACTED] who are a consumer organisation for energy users in industry, commerce and the public sector.</p> <p>Around 60 major energy users responded.</p>
Validity		
Did the options presented comply with the NGGT checklist?	Not applicable – options were not provided.	Not applicable – options were not provided
Can stakeholders meaningfully comment on the options?	Yes – the questions were all relevant to shareholders.	Yes – the questions were all relevant to major energy users.
Were stakeholders well informed?	Yes - it is likely that that shareholders would be well informed on the topics addressed.	Yes - it is likely that that major energy users would be well informed on the topics addressed.
Were questions presented in a way that minimises bias?	Yes - the questions were scoped out and asked by an independent contractor for the purposes of an investor audit.	Yes - direct and clear questions were asked. Contextual information was not provided.

Source: Frontier Economics

3.3.2 Bilateral engagement

NGGT provided us with an outline of the outputs of bilaterals with key industry, government and environmental interest group stakeholders.

This engagement was carried out in July and August 2018 and directly addresses most of the NGGT’s research questions.

Our assessment (Figure 13) is that the engagement in this area is very relevant for the Business Plan, though it does not appear to be from a representative group of stakeholders and some aspects of validity are not clear.

Figure 13 Bilateral engagement: Assessment of robustness

Bilateral engagement	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes, directly relevant
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Overall Business Plan ■ Gas on/off/Network Capability/Asset Health ■ Environment and communities ■ Whole Energy Systems ■ Efficient and affordable ■ Safety ■ Cyber and external threats ■ Information provision
Representation	
Which stakeholders have been involved in the research?	Industry/trade bodies; Regulator/government/ Environmental interest group
What degree of impact could NGGT's actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	<ul style="list-style-type: none"> ■ NGGT targeted stakeholders in a reasonable way. This targeting was based on size, geography, influence and interest (stakeholders who had engaged previously and indicated an interest in engaging further). NGGT targeted a short list of ~70 organisations on this basis. ■ Given the resource intensive nature of this engagement for stakeholders, large organisations may be over represented.
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	Yes
Were stakeholders well informed?	It is not clear what information was given, but most of those consulted are industry specialists.
Were questions presented in a way that minimises bias?	There is not much context on how the research questions were asked, i.e., what options were presented, if stakeholders were well informed, if questions were presented in an unbiased way.

Source: Frontier Economics

3.3.3 Webinars

NGGT shared the outputs of three webinars held in August 2019 with us.


- Network capability webinars;
- Net zero webinar; and

- Responsible supplier webinar.

Another webinar was held in July 2019 with a range of stakeholders, but the purpose of this was mainly to inform stakeholders of the July Business Plan and to give them an opportunity to answer questions. Therefore, we have not included an analysis of this webinar in this report.

Figure 14 shows that there is relevant content from the webinars, though the samples are unlikely to be representative. The validity of the Responsible Procurement webinar is not clear.

Figure 14 Webinars: Assessment of robustness

	Network Capability Webinar	Net zero	Responsible procurement
Relevance			
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes, directly relevant	Yes, directly relevant	Provides context
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ▪ Network Capability ▪ Incentives 	<ul style="list-style-type: none"> ▪ Whole Energy Systems ▪ Environment and communities 	<ul style="list-style-type: none"> ▪ Environment and communities
Representation			
Which stakeholders have been involved in the research?	Customer (entry); Customer (exit); Government/regulator; Shipper; Consultant; Supply chain; Environment Interest group; Think Tank; Other Energy Industry; Industry Trade Body	Energy network owner or operator; Gas Distribution network; Customer (Shipper/Supplier); Regulator or government; Supply chain or consultant; Industry or trade body; Other energy industry; Other non-energy industry	Customer (exit); Government/regulator; Shipper; Consultant; Supply chain; Think Tank;
What degree of impact could NGGT's actions have on these stakeholders?	High	High	High
Is the sample robust, in terms of size and representation?	The invitation was issued to NGGT's full list of stakeholders. There were around 20 attendees.	The invitation was issued to NGGT's full list of stakeholders. There were 25 attendees.	The invitation was issued to all  Over 50 stakeholders attended the webinar.
Validity			

	Network Capability Webinar	Net zero	Responsible procurement
Did the options presented comply with the NGGT checklist?	Yes	Yes	Not applicable
Can stakeholders meaningfully comment on the options?	Yes	Yes	For almost all questions, the level of 'No answer' was quite high. This may have reflected an inability to meaningfully comment.
Were stakeholders well informed?	Most participants responded that they had at least a 'somewhat' informed view'	On a scale of A to E, where is know nothing about NGGT and E great is a great deal, most attendees rated themselves between C and E.	Only 20% of attendees were aware of the Business Plan before attending
Were questions presented in a way that minimises bias?	Yes	Yes	We have not seen the materials presented to attendees

Source: Frontier Economics

3.3.4 Willingness to pay (WTP) materials

NGGT provided us with a WTP study, undertaken by Nera and Explain in 2019. This study included stated preference surveys: one each for domestic and non-domestic gas end users. The surveys used a mix of face-to-face and online methods.

The two gas surveys mainly aimed to test the WTP for five attributes related to the service provided by NGGT:

- risk of supply interruptions;
- improving the environment around transmission sites;
- supporting local communities;
- investing in innovation projects to create future benefits for consumers; and
- supporting consumers in fuel poverty.

The domestic gas surveys also tested consumers' relative preferences for alternative heating technologies such as boilers and heat pumps.

Figure 15 summarises our assessment of this research. Our assessment of the robustness of the WTP study finds that it is generally relevant, robust and valid. It provides a very useful way of understanding the trade-offs consumers make between different priorities. However, given the general issues associated with WTP studies (as described in Figure 10 above), the specific monetary values produced should be treated with some caution.

Figure 15 WTP: Assessment of robustness

NERA/Explain WTP Study	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	The research directly addresses some questions and provides contextual information for others.
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Gas on/off ■ Environment and communities ■ Whole Energy Systems ■ Efficient and affordable
Representation	
Which stakeholders have been involved in the research?	Domestic and non-domestic consumers
What degree of impact could NGGT's actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	<p>The sample for domestic consumers is representative.</p> <p>For non-domestic consumers, a broad mix of businesses, in terms of industry, size and geographic region were contacted.</p>
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	Yes
Were stakeholders well informed?	Based on <5% of people claiming that they do not understand the respective survey questions, we can assume that participants knew about the topic.
Were questions presented in a way that minimises bias?	<p>As noted above, even well-designed WTP analysis should be treated with some caution</p> <ul style="list-style-type: none"> ■ Faced with complex choices, people are likely to simplify any problem they are presented with that they don't know about. For example, people will tend to choose the status quo, or use a rule of thumb such as always going for the cheapest option. ■ People often exhibit loss aversion and do not want to lose the service they have now, so they tend to weight small probabilities very highly. <p>As above, respondents' ability to answer meaningfully may be limited by the experiences that they have had.</p>

Source: Frontier Economics

3.3.5 Interviews

NGGT also provided us with research undertaken via face to face and online interviews that were structured around a bespoke tool in 2019. This research aimed to inform decision making by evaluating customer priorities and the acceptability of investments in key areas.

To mirror the real-world impact of National Grid investment decisions, the choices that a respondent made could result in an increase or decrease in the annual consumer bill. This was illustrated by a virtual bill.

Figure 16 shows that this research is relevant and representative. Issues around validity apply to some of the questions addressed.

Figure 16 Interviews with bespoke tool: Assessment of robustness

Bilateral meetings	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes, directly relevant
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Gas on/off/Network Capability/Asset Health ■ Environment and communities ■ Whole Energy Systems ■ Efficient and affordable
Representation	
Which stakeholders have been involved in the research?	Domestic consumers
What degree of impact could NGGT's actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	Yes, a representative sample of 1000 was included. All respondents were UK residents and bill payers for the appropriate service. Quotas were applied for respondent gender, age, socio-economic grouping and region. A light weighting was applied to ensure that the final sample was nationally representative.
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	<ul style="list-style-type: none"> ■ Participants were asked to make choices based on very small sums of money (e.g. 83p per year, for an increase in reliability). When dealing with very small sums of money it may be difficult to get a cognitively valid response. ■ It would be difficult for stakeholders to answer meaningfully on questions focussed on 'how' NGGT could achieve outcomes. For example, respondents were asked whether NGGT should focus on cutting emissions by investing in renewable technologies, replacing fleet vehicles etc.
Were stakeholders well informed?	Stakeholders were presented with videos and information throughout. However, it is not clear that they would have all the relevant information or expertise to take an informed decision on some questions – for example, see above question on how NGGT should reduce emissions.
Were questions presented in a way that minimises bias?	Care was taken to minimise bias. For example, to minimise order impacts, the tool was designed to allow respondents to complete the sections in any order. Randomisation was also employed within questions.

Source: Frontier Economics

3.3.6 Cultural analysis

NGGT provided us with two cultural analysis reports by Canopy:

- Responsible & Sustainable Business in the UK; and

■ Understanding Reliability.

This analysis used semiotics and cultural analysis to understand how different brands are communicating messages about sustainable business practices and reliability. The reports identify where NGGT is operating in terms of brands and messaging and themes where NGGT could potentially explore.

Our assessment (Figure 17) finds that while this analysis provides useful context on how stakeholders might perceive NGGT relative to other brands, it does not directly provide information on stakeholder preferences.

Figure 17 Cultural analysis: Assessment of robustness

Canopy: Cultural analysis	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Not directly relevant, but provides context
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Gas on/off ■ Environment and communities
Representation	
Which stakeholders have been involved in the research?	It is not clear whether the analysis involved stakeholders directly. The analysis involved fieldwork and digital research.
What degree of impact could NGGT's actions have on these stakeholders?	Not applicable
Is the sample robust, in terms of size and representation?	Not applicable
Validity	
Did the options presented comply with the NGGT checklist?	Not applicable
Can stakeholders meaningfully comment on the options?	Not applicable
Were stakeholders well informed?	Not applicable
Were questions presented in a way that minimises bias?	Not applicable.

Source: *Frontier Economics*

3.3.7 Consumer immersion workshops and deliberative research

Consumer immersion workshops

National Grid provided us with the transcripts of eight consumer immersion workshops. This research seems to have used a focus group- type methodology, rather than a customer immersion methodology –it was not clear what was provided during the sessions in order to immerse consumers in the relevant context (virtual reality, props etc). Participants were provided with information on NGGT's role within the energy sector and contribution to bills. They were asked to rank issues in terms of priority, and they were also asked about their willingness to pay more to tackle these issues.

These were carried out in Birmingham and Edinburgh during February 2019 and July 2019. Participants were asked about their priorities around:

- reliable supply of gas;
- affordability and keeping gas bills down;
- helping the fuel poor and vulnerable; and
- helping the move towards a low carbon economy.

In four of the groups, participants were also asked about cyber security and air quality.

Figure 18 summarises our assessment of this research. We find that these workshops were focused on relevant topics, and may provide some insights into areas perceived as important by some stakeholders. However, it is difficult to achieve representation and validity with this type of research. Given the small samples, and the risks of bias associated with research of this type, care should be taken relation to taking specific quantitative results from these studies.

Figure 18 Consumer immersion workshops: Assessment of robustness

Explain Consumer immersion workshops	
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Yes
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Gas on/off ■ Environment and communities ■ Whole Energy Systems ■ Efficient and affordable ■ Safety ■ Cyber and External
Representation	
Which stakeholders have been involved in the research?	Domestic consumers
What degree of impact could NGGT's actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	No information was provided on the method for selecting participants. A mix of ages, geographies and socio-economic groups were included. As is generally the case with focus groups, sample sizes are small.
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	It may be difficult for stakeholders to respond to some questions – for example around willingness to pay.
Were stakeholders well informed?	Yes, the workshop began with a presentation of relevant information
Were questions presented in a way that minimises bias?	Focus group research is very difficult to carry out without bias – for example, answers may be driven by participants seeking social affirmation

Source: Frontier Economics

Deliberative research

National Grid provided us with the outputs of four group discussions undertaken in Edinburgh and Birmingham in August 2019.

This research was focussed on how consumers felt about the costs of maintaining NGGT’s assets could be spread over time.

Figure 15 shows that this research is relevant, but in common with most focus group-type discussions, there issues with representativeness and validity should inform the interpretation of the results.

Figure 19 Consumer immersion workshops: Assessment of Robustness

	Truth: Deliberative research
Relevance	
Does the evidence directly address the research questions or topics, or does it provide contextual evidence?	Directly
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Overall Business Plan ■ Gas on/off/Network Capability/Asset Health
Representation	
Which stakeholders have been involved in the research?	Domestic consumers
What degree of impact could NGGT’s actions have on these stakeholders?	High
Is the sample robust, in terms of size and representation?	No information was provided on the method for selecting participants. A mix of ages, ethnicities, geographies and socio-economic groups were included. As is generally the case with focus group – type research, sample sizes are small.
Validity	
Did the options presented comply with the NGGT checklist?	Yes
Can stakeholders meaningfully comment on the options?	Yes
Were stakeholders well informed?	Relevant information was provided at the outset.
Were questions presented in a way that minimises bias?	As described in Figure 10, focus group research is very difficult to carry out without bias – for example, answers may be driven by participants seeking social affirmation

Source: Frontier Economics

3.4 Analysis of desktop research

NGGT also asked us to consider three pieces of desktop research

- BEIS: Public Attitudes Tracker (PAT)²
- UKERC: Paying for Energy Transitions³

² <https://www.gov.uk/government/collections/public-attitudes-tracking-survey>

³ <http://www.ukerc.ac.uk/publications/paying-for-energy-transitions.html>

■ Sustainability First: Inspire Project⁴.

These are described in Figure 20. Where relevant, we draw in insights from these pieces of research to the triangulation.

Figure 20 Desktop research

	BEIS (PAT)	UKERC	Sustainability First
Type of study	<p>Face-to-face interviews</p> <p>This survey collects data on public attitudes towards the department's policy areas and runs 4 times a year.</p>	<p>Online survey and focus groups</p> <p>An online survey of the general public followed by five focus groups conducted in Birmingham, Cardiff, Glasgow and two in London. Fieldwork for both the survey and focus groups was conducted in 2016.</p>	<p>Online and phone survey plus semi-structured interviews</p> <p>An online/phone survey to around 50 different GB organisations/vulnerability experts to seek high-level views on innovation and vulnerability and to identify case studies.</p> <p>52 semi-structured in-depth stakeholder interviews (with around 70 people).</p>
Relevance			
Does the evidence directly address the research questions or topics?	Provides context on consumer attitudes to energy bills and climate change	Provides context on consumer attitudes to the energy transition and bills.	Provides context on innovation to support energy customers in vulnerable situations.
Which research questions or topics are addressed?	<ul style="list-style-type: none"> ■ Affordability ■ Whole Energy Systems 	<ul style="list-style-type: none"> ■ Affordability ■ Whole Energy Systems 	<ul style="list-style-type: none"> ■ Environment and Communities
Representation			
Which stakeholders have been involved in the research?	Domestic consumers	Domestic consumers	Energy companies and industry bodies; Consumer and disability organisations; service/product manufacturers; government and regulators; others including academics.
What degree of impact could NGGT's actions have on these stakeholders?	High	High	High

⁴ [https://www.sustainabilityfirst.org.uk/images/publications/inspire/Energy%20for%20All-%20Innovate%20for%20All%20\(summary\).pdf](https://www.sustainabilityfirst.org.uk/images/publications/inspire/Energy%20for%20All-%20Innovate%20for%20All%20(summary).pdf)

	BEIS (PAT)	UKERC	Sustainability First
Is the sample robust, in terms of size and representation?	Data is collected through face-to-face in-home interviews with approximately 4,000 households in the UK	Yes. The survey was designed with quotas to make the sample approximate the British public on income, gender, age, education, and population distributions across the eleven census regions (England, Scotland, and Wales; N=3,150	This is a survey of experts, rather than a representative sample
Validity			
Can stakeholders meaningfully comment on the options (or are they for example purely technical questions)?	Yes	There are issues with the validity of some of the willingness to pay questions (as described above). The exact numerical results should therefore be treated with caution.	Yes
Were stakeholders well informed?	We are not able to assess this question for the desktop research.		
Were questions presented in a way that minimises bias?	We are not able to assess this question for the desktop research.		

Source: Frontier Economics

4 BUSINESS PLAN AND INCENTIVES

This section summarises stakeholders' views on the overall Business Plan and associated incentives.

The relevant research questions are:

- Do our overall proposals meet your needs?
- How acceptable is our plan to you?

Do our proposals in relation to incentives meet your needs?

4.1 Summary of position in the July Business Plan

High level summary of stakeholder priorities

Figure 21 summarises stakeholder and consumer priorities as reported in the July Business Plan.

Figure 21 Overview of stakeholder and consumer priorities



Source: NGGT

High level summary of actions/proposals

NGGT's draft proposal forecast an average annual total cost in RIIO-2 at £599m (excluding pass through costs, potential customer triggered network reinforcement and real price effects).

This includes actions against each of the consumer and stakeholder priorities.

The expenditure brings an additional ~70p to the average domestic end consumer bill. The plan will keep the NGGT's contribution to the typical bill at or below £10 per year in real terms

4.2 Overall acceptability

Figure 22 sets out the key findings against the following research questions:

- Do our proposals meet your needs?
- How acceptable is our plan to you?

Figure 22 Do our proposals meet your needs? How acceptable is our plan to you?

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
New information	All but one participant (out of 43) indicated the plans to be acceptable	The majority of domestic and non-domestic consumers found the plan (and associated bill increases) to be acceptable. 39% of domestic consumers felt that the plan was very acceptable overall and 48% felt that the plan was acceptable. 8% of consumers thought that the proposed plan was unacceptable or completely unacceptable. 21% of non-domestic consumers felt that the plan was very acceptable overall and 61% felt that the plan was acceptable.	Main reasons for finding the Business Plan acceptable for domestic consumers included: affordability (18%) safety and reliability (17%), supporting the future energy system (15%) environment (14%). Main reasons for finding the Business Plan acceptable for non-domestic consumers were safety and reliability (25%), supporting the future energy system (14%) environment (14%).	Reasons for finding the Business Plan unacceptable for domestic consumers mainly related to financial considerations, including objections to paying a higher bill (21%); energy companies making too much profit (21%). Overall conclusions are harder to draw for business consumers as only 22 respondents did not find the proposals acceptable. However, the range of responses provided were similar to the households.	Stakeholders generally responded positively when asked if the proposals met their needs. Some raised specific concerns – for example about the distributional impact on consumers and the role of hydrogen. One industry body said that more attention should be paid to the impact of the proposals on producers, rather than consumers.	WTP for all service areas were in excess of costs in NG business plan Service areas tested were: <ul style="list-style-type: none"> ■ Risk of Supply Interruptions ■ Improving the environment around transmission sites ■ Supporting local communities ■ Investing in innovation projects to create future benefits for consumers ■ Supporting consumers in fuel poverty.
Stakeholder source	Domestic and business consumers (micro and small sized businesses)	Domestic and non-domestic consumers	Domestic and non-domestic consumers	Major energy users; consumer interest group	Domestic consumers and non-domestic consumers	
Trade-offs between priorities	This evidence suggests the trade-offs being made in the Business Plan are acceptable to consumers and stakeholders.					
Source document	Acceptability - Stage 1	Acceptability- stage 2 (survey)			Bilateral meetings	Nera/Explain WTP study

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
Robustness	This research was relevant, but there are generally some issues with representativeness and robustness with this type of research.	This is generally a relevant and representative survey, however, there may be some issues with validity. NGGT's cost to consumers is a relatively small number when contrasted with the overall energy bill. This may make it difficult for consumers to comment meaningfully on bill impacts.			Bilateral meetings are relevant and valid, but not representative.	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.
Relation to stakeholder evidence in BP		Supports existing evidence				
Changes to the BP conclusions and proposed actions		None required				

Source: Frontier Economics

4.2.1 Conclusions

What new evidence is there on stakeholder views?

The research as a whole points to support for NGGT's proposals and the associated costs.

Consumers and stakeholder indicated that NGGT's proposals generally are acceptable.

- The majority of domestic and non-domestic consumers find NGGT's proposals, along with the associated bill increases, acceptable. However, we note that consumers may find it difficult to comment meaningfully on this, given the very small contribution of NGGT's activities to the overall gas bill and the small change in bill that arises depending on differences in NGGT's proposed plan.
- Domestic and business consumers have indicated that they would support investment all service areas, though we note that the estimated specific level of willingness to pay should be treated with some caution.
- Bilateral engagement also found support among major energy users for the Business Plan proposals, though there was some concern over the potential bill impact for producers.

Is there a consensus among stakeholders?

There is a good degree of consensus in relation to general acceptability of the Business Plan.

How does this compare to the findings described in the July Business Plan?

This supports the findings in the July Business Plan and provides new evidence on support for the proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

It may be useful to present more on the impact of the proposals on non-domestic bills.

How have trade-offs been made in reaching these conclusions?

The evidence suggests that consumers are generally happy with the trade-offs NGGT has made in developing its proposals.

While a concern was expressed by producers on the bill impacts of the proposals, this concern seems to relate more to the need for evidence in this area, rather than an objection to the proposals themselves.

4.3 Incentives

Error! Reference source not found. sets out new findings against the following research question: Do our proposals on incentives meet your needs?

Figure 23 Do our proposals on incentives meet your needs?

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
New information	Only one stakeholder out of 8 agreed with the statement 'Incentives have driven positive outcomes for customers and consumers during the RIIO1 period'. Two stakeholders responded, 'Don't know'. The majority of customers did not respond.	When faced with the statement "We are talking to you about how consumer value is delivered by the incentives. Is our current articulation of consumer value working for you?" 3 out of eight stakeholders responded "somewhat" The majority of stakeholders did not respond.	Producers are generally happy with the proposals set out in the Business Plan.	An entry customer was generally supportive of the plan for incentives, but was also interested in the size of the overall pot for incentives.	Customers found all proposed incentive areas important and could not rank them. They expect NGGT to be efficient regardless of incentives. Rewards should be for outperformance of BAU, though not all stakeholders were clear on what outperformance would involve. Some argued that all incentives should be symmetrical. The GSO needs a reward framework. There was also a set of detailed comments on the constraints and maintenance incentives (not reported here).	General support that the identified areas are the right ones to incentivise. One group thought the maintenance incentive was the most important. General support for symmetrical incentives with caps and collars. One stakeholder did not think there should be an upside on GHGs, but other stakeholders though this could provide a useful incentive. One group pointed out the cap for demand forecasting was very large (relative to residual balancing) and that this doesn't seem in line with the importance of this area to customers. One group pointed out that caps should be set a high level so that performance is not limited. Another group said that outperforming all the time would suggest that targets are wrong, and that targets should be adjusted every couple of years, where things have changed. Additional clarity on what constitutes outperformance would be welcome. There was also a set of detailed comments on all incentives (not reported here).

Triangulation of stakeholder engagement outputs: Gas Transmission

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
Stakeholder source	Customer (Shipper/Supplier); Customer (Exit); Supply chain or consultant; Industry or trade body.		[REDACTED]		Customers – exit	Customers – entry and exit
Source document	Network Capability Webinar		Bilateral	Bilateral	[REDACTED] meeting	Ops forum
Robustness	There is relevant content from the webinars, though the samples are unlikely to be representative.		Bilateral meetings are relevant and valid, but not representative			
Relation to stakeholder evidence in BP	Provides context		New evidence on acceptability		New evidence on incentives	
Changes to the BP conclusions and proposed actions	None				More clarity on what constitutes outperformance. NGGT could respond to the detailed points raised in the discussion.	More detail on how caps were set and for the process of changing targets. More clarity on what constitutes outperformance.

Source: Frontier Economics

4.3.1 Conclusions

What new evidence is there on stakeholder views?

Customers at the [REDACTED] and Ops forums had a set of detailed comments on incentives. In addition, they made the following high level points.

- The expectation is that NGGT should be efficient and economic regardless of incentives. However, there was agreement that NGGT should get incentive rewards for clear outperformance of business as usual expectations.
- There was broad agreement on that incentives were being set in the right areas, and one group also said that the GSO should have an incentive framework.
- There was also general support for symmetrical incentives with caps and collars, with some discussion of the appropriate levels of the caps.

Is there a consensus among stakeholders?

Stakeholders broadly agree with the areas selected for incentives and the cap and collar approach.

One stakeholder did not think there should be an upside on GHGs, but other stakeholders though this could provide a useful incentive.

Some stakeholders could not rank the incentives in terms of importance. One group felt that maintenance was the most important. Another group argued that demand forecasting was less important than residual balancing.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

Stakeholders did not always have a clear view of what would constitute going beyond business as usual and more detail could be provided describing the process for determining this.

More detail could also be provided to justify the size of the proposed caps, including to explain the relativities (e.g. between demand forecasting and residual balancing) and to describe the likely impact on NGGT actions.

More detail could also be provided on the process or required conditions for adjusting targets.

NGGT could also consider responding to the detailed comments made on individual incentives (not reported here).

How have trade-offs been made in reaching these conclusions?

None

5 NETWORK CAPABILITY

Capability relates to ability of the network to accommodate gas flows onto and off the network.

This section addresses the following research questions.

- Do our proposals meet your needs?
- Do our metrics give you useful information on the current and future capability of the gas transmission network?
- Are the levels of risks that consumers are exposed to suitable now and in the future?
- How should we balance the interactions across the three consumer priorities now and in the future?

5.1 Acceptability of proposals

We consider the following question: Do our proposals meet your needs?

5.1.1 New findings

Figure 24 Do our proposals meet your needs?

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
New information	<p>76% of domestic consumers accept the proposals for new pipelines and equipment for new connections to the transmission system, including the bill impact.</p> <p>14% of domestic and non-domestic consumers said that their main reason for accepting the Business Plan was to upgrade the network to meet future needs of the energy system.</p>	<p>Producers are generally happy that they were clear that they don't want to have capacity constraints, that they want to be able to flow gas when they want to. They wanted to ensure that future developments would be in FES.</p> <p>They stressed the importance of having the right tools and information sharing mechanisms to deal with stress days.</p>	<p>Stakeholders were interested in zonal capacity and the flexibility of service – including variable operation with a day. They wanted to understand implications for Net Zero and the number of days of disruption.</p>	<p>Access to capacity is key; we have to make it easy for the market to access the capacity on the NTS that exists. Existing processes are cumbersome (PARCA).</p> <p>It's important to keep sufficient flexibility for electricity generation (e.g. CCGTs accessing gas at peak time) and to keep options open for net zero.</p>	<p>Customers had specific comments on gas terminals. For St. Fergus, the view was to leave it alone unless there was a clear economic case to make changes. For Easington, the view was to leave everything as it is. For Theddlethorpe there was a suggestion that a new licence category of "dormant capacity" could be created.</p>
Stakeholder source	Domestic and non-domestic consumers	[REDACTED]	[REDACTED]	[REDACTED] (Customer – exit)	Customers – exit
Trade-offs between priorities (affordability, reliability, environment)	16% of domestic consumers agree with the proposals, but do not agree with the bill impact.	Not mentioned	Stakeholders asked for further information on the bill implications of the plans	Not mentioned	Reliability and cost
Source document	Acceptability survey – Phase 2	Two bilateral engagements (email)	Bilateral engagement	Bilateral engagement	[REDACTED] meeting

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
Robustness	This is generally a relevant and representative survey, however, there may be some issues with validity. NGGT's cost to consumers is a relatively small number when contrasted with the overall energy bill. This may make it difficult for consumers to comment meaningfully on bill impacts	Bilaterals are relevant and valid but not representative			Valid and relevant, but not representative
Relation to stakeholder evidence in BP	Provides new evidence on acceptability				New information
Changes to the BP conclusions and proposed actions	None required				NGGT could respond to these detailed points,

Source: Frontier Economics

5.1.2 Conclusions

What new evidence is there on stakeholder views?

A very high proportion of consumers accept the Business Plan proposals in this area.

Stakeholders, including entry and exit customers, were also broadly supportive of the plans. Specific concerns were raised around flexibility and zonal capacity and the need to consider Net Zero. Some asked for more information on the bill implications.

Is there a consensus among stakeholders?

Yes

How does this compare to the findings described in the July Business Plan?

This new evidence supports the previous findings.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

How have trade-offs been made in reaching these conclusions?

None

5.2 Information

This section covers the research question ‘Do our metrics give you useful information on the current and future capability of the gas transmission network?⁵.’

⁵ Stakeholders were presented with detailed information on the metrics.

5.2.1 Findings

Figure 25 Do our metrics give you useful information on the current and future capability of the gas transmission network?

	Evidence 1	Evidence 2	Evidence 3
New information	<p>Stakeholders had mixed views on whether the level of information provided was sufficient.</p> <p>Most felt the metrics were either useful or somewhat useful. Additional information requested included: impact on flows/pressures during incidents; charts for all entry and exit zones; more detailed information around flows and pressures in each zone, and potential longer term impact; iterative feedback on the impact of asset closure/reduction on all zones; more on the quantification of risk; the level of capability we are proposing to retain.</p> <p>One stakeholder pointed out the analysis did not take account of the underlying value of the capacity to users.</p>	<p>There was support for NGGT’s proposal for an enduring annual process for engaging on and producing network capability metrics.</p>	<p>All present supported NGGT’s proposal for an enduring process and continuing to develop metrics.</p> <p>One attendee said they were nervous about the lack of an in-day NC measure</p>
Stakeholder source	<p>Customer (entry); Customer (exit); Government/regulator; Shipper; Consultant; Supply chain; Environment Interest group; Think Tank; Other Energy Industry; Industry Trade Body</p>	<p>██████████ (Customer – exit)</p>	<p>Customers -exit</p>
Trade-offs between priorities (affordability, reliability, environment)	<p>One stakeholder requested further information on costs and bill impacts</p>	<p>Not mentioned</p>	<p>Not mentioned</p>
Source document	<p>Network Capability webinar</p>		<p>██████████ meeting</p>
Robustness	<p>Relevant and valid but not representative.</p>	<p>Relevant and valid but not representative</p>	
Relation to existing stakeholder evidence in BP	<p>New information</p>	<p>New information</p>	<p>New information</p>
Changes to the BP conclusions and proposed actions	<p>Respond to the specific requests for more detail.</p>	<p>Include a commitment for an annual process of engagement on metrics.</p>	

Source: Frontier Economics

5.2.2 Conclusions

What new evidence is there on stakeholder views?

Stakeholders are broadly happy with the metrics, but have suggested improvements in some specific areas.

Is there a consensus among stakeholders?

Yes, stakeholders broadly like the metrics though they requested new information across different areas.

How does this compare to the findings described in the July Business Plan?

Findings in this area were not reported in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

The Business Plan could set out the areas where further detail may be added to the metrics. It could also mention the plan for ongoing engagement on these metrics.

How have trade-offs been made in reaching these conclusions?

While it may not be cost-effective or feasible to provide all the information requested by stakeholders, the requests should be considered and responded to.

5.3 Risk and trade-offs between priorities

This section covers the research questions:

- How should we balance the interactions across the three consumer priorities, now and in the future?
- Are the levels of risk that consumers are exposed to suitable, now and in the future?

5.3.1 New findings

Figure 26 Trading of priorities and risk

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
New information	A slightly higher share of domestic consumers (42%) would prefer increased levels of supply reliability over current reliability levels (38%). In contrast, only 12% of respondents would be in favour of allowing higher supply interruption risk levels.	The WTP study analysed how much domestic and non-domestic customers would be willing to pay in order to reduce the current level of supply interruption risk by 1/10,000. According to the outcomes of the study, domestic customers would be willing to pay £6.5-£8 p.a. more on their annual bill and non-domestic customers would be willing to accept a 1.5% increase of the annual bill to reduce risk.	The WTP study found positive willingness to pay for all gas service attributes, including environment and reliability.	In both workshops held, customers gave diverse views on whether they would support a 50p increase of the annual bill in order to increase investments related to reliability improvements.	Average acceptance levels for higher bills were similar across the four goals presented to participants highest for 'ensuring a reliable supply' (12.7%) followed by 'helping vulnerable and disadvantaged groups' (9.6%), 'reducing energy use' (9.4%) and 'increasing low-carbon energy' (9.1%).
Stakeholder source	Domestic consumers	Domestic consumers, and non-domestic consumers	Domestic and non-domestic consumers.	Domestic consumers	Domestic consumers
Trade-offs between priorities	For the majority of respondents, the current level of reliability should at least not decrease. The largest group would even be willing to pay extra to reduce supply interruption risk.	The WTP survey showed a high prioritisation of reliability over affordability.	Consumers were willing to pay more to increase reliability and environmental outcomes.	There was no consensus among participants and different trade-offs were made.	A slightly higher proportion were willing to pay more for reliability than for the other priorities.
Source document	Interviews with bespoke tool	NERA/Explain WTP Study	NERA/Explain WTP Study	Consumer immersion workshop	UKERC

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
Robustness	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	These results are relevant and representative. However, as set out in Section 3 there are likely to be issues with the validity of the specific numerical estimates. However, the research can still provide useful insights on the fact that consumers generally support investment across all areas.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.
Relation to existing stakeholder evidence in BP	In line with current findings, in that stakeholders at least prefer to maintain current risk levels and that a sizeable proportion of respondents (but not a majority) would prefer to decrease supply risks further	Supports the current view that the current reliability levels should be at least maintained.		On the basis that participants have diverse views, it is difficult to relate the new evidence to existing findings.	Supports the current view that the current reliability levels should be at least maintained.
Changes to the BP conclusions and proposed actions	There is some support for additional actions on reliability, and consumers would be willing to pay more for this.				

Source: Frontier Economics

5.3.2 Conclusions

What new evidence is there on stakeholder views?

There is evidence that domestic and non-domestic consumers are prioritising reducing disruption risks over affordability.

- Domestic consumers would generally like at least as much reliability as they have at present and would be happy to pay more for investments in this area.
- Domestic and large and small non-domestic would be happy to pay more in this area for a 1/10,000 reduction in the probability of a supply interruption.
- Major energy users stressed the importance of reliability and have pointed out that there are financial and commercial consequences for them of supply interruptions but have not directly commented on current levels and expected future levels of reliability.

Is there a consensus among stakeholders?

There is some divergence on the trade-offs domestic consumers are making between reliability and affordability. A significant proportion of domestic consumers prefer to maintain current disruption risk levels, while a slightly larger proportion prefers to pay more for more secure supply.

How does this compare to the findings described in the July Business Plan?

This new evidence supports the previous findings.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes are required.

In light of additional evidence that a significant share of stakeholders would prefer a reduction of disruption risk, NGGT might want present further information on the costs associated with decreasing the risk of supply interruptions.

How have trade-offs been made in reaching these conclusions?

The evidence suggests that stakeholders are supportive of at least as much investment to reduce disruption risk as was described in the July Business Plan. While it could be argued that NGGT should go further to reduce disruption risk, there is limited evidence suggesting that stakeholders are unhappy with the current levels of risk.

6 GAS ON AND OFF, ASSET HEALTH AND CONNECTIONS

As a joint transmission owner and system operator, NGGT is responsible for maintaining, operating and future proofing the physical network and the operating processes that ensure gas supply to customers. By licence, the company must limit interruptions to the network and meet peak demands even under unlikely and extreme conditions. To achieve this, NGGT plans to undertake investments in the following categories in RIIO-2:

- Asset health, including redundant assets
- Asset management and network resilience
- System operator function
- Environmental resilience

This chapter covers the following questions:

- Do our proposals meet your needs in relation to asset health?
- Do our proposals meet your needs in relation to Gas on/off?

Stakeholder feedback has already informed the creation of the NGGT business plan. The July draft report sets out the main conclusions drawn from the feedback received at the time and proposes actions for RIIO-2 based on the stakeholder feedback received.

6.1 Asset Health

This covers stakeholder trade-offs between reliability and costs and NGGT's plans to maintain current assets.

6.1.1 Summary of position in the July Business Plan

Figure 27 summarises stakeholder views and proposed actions from the July Business Plan.

Figure 27 Asset health in the July Business Plan

Investment category	Stakeholder views	Proposed actions
Asset health (general)	<ul style="list-style-type: none"> ■ Reliable gas supplies are essential for consumers of gas. In particular, consumers of high quantities see reliability of gas supply as a major priority. <ul style="list-style-type: none"> □ Stakeholders do not want to see an increase in supply risk, and they are willing to pay more to achieve this. □ Overall, there is very slightly more support for increasing the reliability by 10% compared to keeping risk the same as RIIO-1. However, the responses varied across stakeholder ■ There is strong support from stakeholders to pursue the future-proofing option and to strengthen our focus on options around improving efficiency. 	<ul style="list-style-type: none"> ■ The current proposals involve investments of £288m p.a. on asset health programmes in order to maintain the current level of reliability and availability, i.e. at the same levels as RIIO-1. ■ Maintenance projects justified by cost/risk analysis. Proposed projects cover, for instance, the maintenance of compressor trains, plant & equipment, pipelines, and assets that support the functioning of the network. ■ Asset investments driven by legislative requirements, management of indirect assets and obsolescence.
Asset health (Bacton and King's Lynn)	<ul style="list-style-type: none"> ■ NGGT tested the proposed action⁶ to redevelop the terminal and decommission the redundant site during a webinar with Bacton stakeholders with 67% of responses in being favour and 33% unsure. ■ Regarding King's Lynn there the survey cites only limited stakeholder engagement, but NGGT argues that the proposed action is needed in other to prevent health & safety concerns and to guarantee supply security for users of the Bacton terminal. 	<ul style="list-style-type: none"> ■ Two standalone projects defined Price Control Deliverables <ul style="list-style-type: none"> □ Site redevelopment and decommissioning at Bacton Terminal, and □ Subsidence works at King's Lynn compressor site.

6.1.2 Summary of new findings

This section covers asset health in terms of NGGT's plans to maintain current assets (Figure 28). It addresses the questions: do our proposals meet your needs in relation to asset health?

⁶ The current option takes into account feedback from stakeholders that are users of the Bacton terminal, who stated the long-term importance for the "recovery of southern North Sea gas, reducing offshore compression requirements, facilitating interconnector flows (import and export) and for the Great Yarmouth power station connected to the site."

Figure 28 Do our proposals meet your needs in relation to asset health?

Topic	Evidence 1	Evidence 2	Evidence 3
New information	Testing the acceptability of the NG draft business plan proposals to maintain the condition of pipes and equipment resulted in the following outcomes: The majority of domestic consumers support the current plans and related costs (62%).	Testing the acceptability of the NG draft business plan proposals to decommission sites and restoring land resulted in the following outcomes: Majority supports current plans and related costs (66%).	There is a strong preference for costs associated with the demolition of existing assets to be borne by current customers, rather than by future customers. Stated WTP lay between £4.5 and £9 p.a., which is significantly above predicted costs of 10p.
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities	28% of respondent only mentioned support for suggested proposals, however not the related costs.	17% of respondents only support the proposed actions but not the related costs	In this regards, environmental concerns and future affordability were more important than current affordability concerns
Source document	Acceptability survey	Acceptability survey	Deliberative research on asset management
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.	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.	The findings are relevant but less likely to be representative and there may be some issues with validity (see Section 3).
Relation to existing stakeholder evidence in BP	New evidence on acceptability	.	.
Changes to the BP conclusions and proposed actions	NGGT received support for the proposed actions, however it could further explore options to potentially reduce costs.		No action required

Source: Frontier Economics

6.1.3 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

There is broad support from domestic customers for the proposed plans on maintaining pipes and equipment and for the proposed actions to decommission redundant sites.

How does this compare to the findings described in the July Business Plan?

This reinforces the findings in the July Business Plan and provides new evidence that consumers find NGGT's plans for maintenance of existing assets acceptable.

Are there particularly diverse views or a consensus?

There is a consensus that stakeholders accept the proposed actions from the July Business Plan, but a significant proportion of consumers are not happy with the consequences for bills.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

How have trade-offs been made in reaching these conclusions?

Consumers are trading off cost and outcomes in this area, but the majority are happy with NGGT's proposals.

6.2 Gas on/off

This section covers stakeholder views on NGGT's gas system operation role.

6.2.1 Summary of position in the July Business Plan

Figure 29 summarises NGGT's position in the July Business Plan.

Figure 29 Gas system operation in July Business Plan

Investment category	Stakeholder views	Proposed actions
Gas system operation	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ Increasing capabilities of human and IT resources

Source: Frontier Economics

6.2.2 Summary of new findings

Figure 30 Do our proposals meet your needs in relation to gas on/off?

Topic	Gas system operation
New information	Testing the acceptability of the NG draft business plan proposals to managing the gas transmission system resulted in the following outcomes: 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 BP	First evidence on the acceptability of the proposals, hence not comparable with existing stakeholder views.
Changes to the BP 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.

Source: Frontier Economics

6.2.3 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

The majority of domestic consumers accept NGGT’s proposals in this area, though a significant proportion (around a quarter) do not accept the costs.

How does this compare to the findings described in the July Business Plan?

This provides new information on the views of domestic consumers in terms of their support for NGGT’s proposed investments and suggests that costs in this area remain important.

Are there particularly diverse views or a consensus?

There is only one piece of evidence directly relating to gas system operation.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

How have trade-offs been made in reaching these conclusions?

Consumers are trading off cost and outcomes in this area, but the majority are happy with NGGT’s proposals.

6.3 Connections

6.3.1 New findings

This section addresses the research question: “Does our draft plan address your needs of us for the RIIO-2 period.”

Figure 31 Does our proposal meet your needs?

Topic	Evidence 1
New information	Testing the acceptability of the NG draft business plan proposals to invest in new pipelines and equipment for new connections to the transmission system resulted in the following: The majority of domestic consumers supports the current plans and related costs (76%), however, 16% of respondents only support the proposed actions but not the related costs.
Stakeholder source	Domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	n/a
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 BP	First evidence on the acceptability of the proposals, hence not comparable with existing stakeholder views.
Changes to the BP conclusions and proposed actions	NGGT received support for the proposed actions, however it should further explore options to potentially reduce costs.

Source: Frontier Economics

6.3.2 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

There is broad support from domestic customers for the proposed actions for investments into new pipes and equipment.

How does this compare to the findings described in the July Business Plan?

This provides new information on the views of domestic consumers, both in terms of their support for NGGT's proposed investments.

Are there particularly diverse views or a consensus?

There is a consensus to accept the proposed actions in the July Business Plan, but 16% of consumers do not accept the associated cost.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

This reinforces the case for the actions proposed in the July Business Plan.

How have trade-offs been made in reaching these conclusions?

NGGT received support for the proposed actions, however it should further explore options to potentially reduce costs.

7 ENVIRONMENT

Stakeholders have previously told NGGT that they would like it to care for the environment and communities. Stakeholders believe that NGGT has an important role to play in protecting the environment and moving towards decarbonisation.

This section triangulates the new stakeholder evidence received for the stakeholder priority “I want you to care for the environment and communities”.

We consider the following research questions in this section:

- Do our proposals meet your needs?
- How important is to for us to tackle the issue of air quality?
- What is the role of NGGT for vulnerable consumers (current and future)?

7.1 Overall acceptability

This section addresses the research question: ‘Do our proposals meet your needs?’

7.1.1 New findings

There is a large amount of evidence in this area, so we have split it as follows:

- overall environment (Figure 32);
- climate change- domestic (Figure 33) and other stakeholders (Figure 34);
- natural environment -domestic (Figure 35) and other stakeholders (Figure 36);
- quarry and loss (Figure 37); and
- supporting the local community - domestic (Figure 38) and other stakeholders (Figure 39)

Figure 32 : Overall environment

	Evidence 1	Evidence 2	Evidence 3
New information	<p>Respondents were asked to rate five investment areas on the importance they would place on a scale of 1 to 5 for investment in innovation. Based on average rank, "environmental impact" ranked third, with 45% respondents giving a ranking of 5 (extremely important) on a scale of 1 to 5.</p> <p>A majority of consumers (almost 70%) ranked "environmental impact" as highly important or "important". 45% of respondents ranked it as 5 (extremely important), 24% as 4, 18% as 3, 8% as 2 and only 6% as 1 (not at all important).</p> <p>13% of domestic consumers and 14% of non-domestic consumers ranked protecting and improving the environment as their main reason for supporting the proposals in the Business Plan.</p>	<p>Respondents were asked to rate the importance of four investment areas on a scale of 1 to 5, where NGGT should replace equipment and increase maintenance work. The average rank of "environment" was third (behind "health and safety" and "reliability" and ahead of "transport").</p> <p>At the same time, 41% of respondents identified "environment" to be a very high priority for NGGT (similar figures for "health and safety" and "reliability" were 48% and 43% respectively), 25% as 4, 20% as 3, 6% as 2 and 7% as 1 (very low priority).</p>	<p>As part of the consumer immersion workshop, participants were asked to come up with suggestions of ways NGGT can help members of the public. Of the suggestions proposed, "improve environment" ranked the highest (among other suggestions - encouraging STEM subjects, working with others to help communities, make land available for others, dedicate volunteer hours to employees).</p>
Stakeholder source	Domestic and non-domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities	Looking at the average rank, "Environmental impact" was placed third, behind "reliability and maintenance" and "safety and engineering", and ahead of "security" and "decarbonisation of energy", which was a much lower priority for stakeholders.	Environment was ranked third, behind "health and safety" and "reliability" but substantially ahead of "transport" based on average ranks.	No trade-offs, as other options presented / suggested were also on improving the environment in some way.
Source document	Interviews with bespoke tool	Interviews with bespoke tool	Consumer immersion workshop - February 2019
Robustness	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.

	Evidence 1	Evidence 2	Evidence 3
Relation to stakeholder evidence in BP	Reinforces the existing Business Plan conclusions		
Changes to the BP conclusions and proposed actions	No change is needed.		

Source: Frontier Economics

Figure 33 Carbon emissions – domestic consumers

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6 and 7
New information	Consumers rank "helping the move towards low carbon economy" as the second highest priority behind "reliable supply of gas". In addition, on average 54% of respondents voted yes, 21% voted no and 25% were unsure on being asked to pay slightly more on their annual bill (less than £1).	Consumers consider reducing carbon emissions to be very important. Most respondents are willing to pay 50p more on an estimated bill of £9 (estimated amount of the bill that covers NGGT) for NGGT to reduce its carbon emissions. Almost all in the study were willing to pay more to allow NGGT to reduce its carbon emissions (27 respondents). 4 consumers were unwilling to pay more while 1 was unsure.	When asked what NGGT should do about GHG emissions, fewer than 10% of respondents answered "do nothing" or "I don't know". 75% voted investing in renewable technology, 64% in carbon neutral construction, 62% in green power and 50% in fleet vehicles. There were some variations by gender, region and socio-economic groups.	Consumers gave "fighting climate change" the second highest average rank. While consumers consider climate change important, not all consumers considered "fighting climate change" of the utmost priority. 20% of respondents gave it a ranking of 1 (most important), a little more than 30% of 2, approx. 13% of 3, approx. 12% of 4, approx. 11% of 5 and approx. 11% of 6 (least important).	76% of respondents agree with the proposed investment (as in BP) and its impact on their bills (£0.01) in relation to reducing carbon emissions from NGGT operations. 17% of respondents agree with the proposed investment but not with its bill impact and 2% do not agree with the investment. In addition, 48% of respondents would like to see more investment in this area, 17% less investment, 11% would like to remove investment and 24% would like to see no change in the investment in this area.	UKERC research finds that consumers would be willing to pay more for 'increasing low carbon energy'. BEIS found that in March 2019, 86% of consumers agreed with the statement that "if everyone does their bit, we can reduce the effects of climate change".
Stakeholders	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities	The exercise asked respondents to rank between reliability, environment, affordability and helping the community (vulnerable consumers). Respondents gave reliability the highest importance, followed by environment, affordability and helping the vulnerable, in that order.	There was a higher consensus among consumers to pay 50p more towards carbon emissions than towards reliability (at least 8 respondents said no and 3 were unsure).	No trade-offs, as stakeholders were asked to comment on the different investments NGGT can undertake.	"Minimising gas bill" has the highest average rank (least important), followed by "minimising disruption to gas reply" (second least important), while "fighting climate change" has the second lowest average rank.	Consumers are happy to trade off affordability for investment in this area.	Consumers are happy to trade off affordability for investment in this area.

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6 and 7
Source document	Consumer immersion workshop - February 2019	Consumer immersion workshop - July 2019	Interviews with bespoke tool	NERA/Explain WTP Study	Acceptability Phase 2 - survey	BEIS PAT and UKERC
Robustness	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.		The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	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.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.
Relation to evidence in BP	Reinforces the existing Business Plan conclusions					
Changes to the BP conclusions and proposed actions	No change required.	No change required.	No change required in BP proposals, although NGGT could do more to explain how it arrived at the specific actions it has chosen to undertake.	No change required.	No change required.	No change required.

Source: Frontier Economics

Figure 34 Topic 3: Carbon emissions – other stakeholders

	Evidence 1	Evidence 2	Evidence 3	Evidence 5
New information	There is a social obligation to reduce methane emissions. Even though there isn't much legislation on this, the industry needs to demonstrate that we are working to reduce these emissions.	Stakeholders were asked to rank a number of areas based on priority. On average "fighting climate change" was ranked as the most important area valued by stakeholders, with 30% of respondents choosing this area as their highest priority, approx. 20% ranking as 2, approx. 30% as 3 and 4 together, approx. 12% as 5, and less than 10% as 6 (least important).	NGGT has set a target of changing 30% of its fleet to low carbon-fuelled vehicles by the end of RII02. [REDACTED] would like to know how this figure has been chosen, if a higher target is achievable and what would be the cost to consumers of both a 100% target and the current proposals.	One stakeholder asked why the Business Plan does not consider the effect of climate change on assets, e.g. long periods of hot weather when compressors need to run.
Stakeholder source	Industry / trade body [REDACTED]	Non-domestic consumers	Consumer interest group [REDACTED]	Customer (shipper / supplier)
Trade-offs between priorities (affordability, reliability, environment)	No trade-offs	Consumers have made trade-offs between environment, affordability and reliability. "Minimising disruption to gas supply" and "Minimising the gas bill" have a higher average rank (less important for consumers), compared to "fighting climate change", which was ranked as the most important.	[REDACTED] is pushing NGGT to provide more detail on a specific trade-off between affordability and ambition in abatement through fleet management.	Trade-off between environment and reliability
Source document	Overall BP engagement	NERA/Explain WTP Study	[REDACTED] response to NGGT draft RII02 Business Plan	Overall BP engagement
Robustness	The findings are relevant and valid. However, representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are relevant and valid. Representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.	The findings are relevant and valid. Representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.
Relation to existing stakeholder evidence in BP	New information, not presented in BP			

	Evidence 1	Evidence 2	Evidence 3	Evidence 5
Changes to the BP conclusions and proposed actions	No changes required.	No changes required	NGGT could provide more evidence on how the EV target was set. This would require an appraisal of the incremental cost.	NGGT actions in relation to compressors and hot weather could be noted.

Source: *Frontier Economics*

Figure 35 Responsible asset use and caring for the natural environment – domestic consumers

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
New information	<p>To improve the environment around transmission sites, for an additional 3 large sites and 10 small sites, domestic consumers would be willing to pay £3.61 per consumer per year and for an additional 11 large sites and 30 small sites domestic consumers would be willing to pay £5.37 per consumer per year</p> <p>Almost 50% respondents chose "protecting the local environment" as their highest priority and it received the highest average rank (in comparison to fighting climate change, supporting innovation, supporting local communities, minimising disruption to gas supply and minimising gas bill, in order of priority.)</p>	<p>Consumers were asked what NGGT should do with redundant assets. Consumers were overwhelmingly in support of demolition. However, there was less consensus over whether to demolish only high-risk assets (38%) or all above ground assets (37%).</p>	<p>Consumers were asked what NGGT's approach should be in adapting sites from 2021 to 2026. Just over half of the respondents answered obtaining the greatest overall environmental value from each site (53%), with 25% voting for creating important habitats for wildlife identified by local partners, 10% voting to give local communities more access and 12% advising NG to stop undertaking such projects or unsure of their response.</p>	<p>Participants were asked to come up with suggestions of ways NGGT can help members of the public. Of the suggestions proposed, "make land available for others" ranked 4th (out of 5).</p> <p>There was also a good degree of consistency between social groups as to the relative priority of "making land available to others".</p>
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities	<p>"Minimising gas bill" has the highest average rank (least important), followed by "minimising disruption to gas reply" (second least important), while "protecting the local environment" has the lowest average rank (most important for consumers).</p>	<p>Consumers may be signalling they would prefer a smaller cheaper programme when asking for only high-risk assets to be demolished.</p>	<p>Does not inform on trade-offs with respect to affordability but gives views on stakeholder preferences around preferred final use for land after improvement works.</p>	<p>No trade-offs, with respect to affordability or reliability as stakeholders were choosing between different ways NGGT can help the public.</p>

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
Source document	NERA/Explain WTP Study	Interviews with bespoke tool	Interviews with bespoke tool	Consumer immersion workshop - February 2019
Robustness	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.
Relation to existing stakeholder evidence in BP	Reinforces the existing Business Plan conclusions.	Generally supportive, although the lack of consensus over whether to demolish all assets or not may warrant analysis and a clear explanation.	Reinforces the existing Business Plan conclusions.	Reinforces the existing Business Plan conclusions.
Changes to the BP conclusions and proposed actions	No further actions are required on the basis of this feedback.	The question of whether all assets or only above ground assets should be demolished could be addressed in the plan	None required.	None required

Source: Frontier Economics

Figure 36 Responsible asset use and caring for the natural environment – other stakeholders

	Evidence 1	Evidence 2	Evidence 3
New information	<p>To improve the environment around transmission sites, for an additional 3 large sites and 10 small sites, non-domestic consumers would be willing to pay £9.91 per consumer per year or 0.31% of the change in the bill and for an additional 11 large sites and 30 small sites non-domestic consumers would be willing to pay £36.35 per consumer per year or 1.13% of the change in the bill</p> <p>"Protecting the local environment" has the second highest average rank (ranked as the second least important) with less than 10% stakeholders stating it as the highest priority.</p>	<p>Would like to see the targets set for implementing a year on year increase on natural capital assets, since [REDACTED] was unable to view the appendices to the BP.</p>	<p>66% of respondents agree with the proposed investment in the Business Plan and its impact on their bills (£0.06) in relation to decommissioning sites and restoring land. 26% of respondents agree with the proposed investment but not with its bill impact and 1% do not agree with the investment.</p> <p>In addition, 40% of respondents would like to see more investment in this area, 15% less investment, 12% would like to remove investment and 33% would like to see no change in the investment in this area.</p>
Stakeholder source	Non-domestic consumers	Consumer interest group ([REDACTED])	Business and domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	<p>Consumers have made trade-offs between environment, affordability and reliability. "Minimising disruption to gas supply" and "Minimising the gas bill" have a lower average rank (more important for consumers), with "minimising the gas bill" considered the most important of the three and "protecting the local community" the least important.</p>	[REDACTED] is implicitly addressing the trade-off between affordability and ambition.	Trade-offs between environment and affordability
Source document	NERA/Explain WTP Study	[REDACTED] response to NGGT draft RIIO2 Business Plan	Acceptability survey
Robustness	<p>The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.</p>	<p>The findings are relevant and valid. However, representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.</p>	<p>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.</p>

	Evidence 1	Evidence 2	Evidence 3
Relation to existing stakeholder evidence in BP	The WTP estimates do indicated that non-domestic stakeholders support the quantum of activity NGGT is proposing – but the low priority given to this by non-domestic customers may require a specific mention in the plan.	██████████ is asking for more evidence on why NGGT’s selected level of ambition is appropriate.	
Changes to the BP conclusions and proposed actions	We recommend that NGGT sets out the diversity of views between domestic and non-domestic consumers and explains how despite this it considers its proposed actions justified.	NGGT should explain the basis for its target in respect of natural capital, stressing how ambitious it is versus prevailing practice.	No changes are recommended, but we propose that NGGT reflects on the weak support for more investment so as to place their proposed actions in context.

Source: Frontier Economics

Figure 37 Quarry and loss

	Quarry and loss
New information	71% of respondents agree with the proposed investment and its impact on their bills in relation to compensating landowners for impacts from NGGT’s pipelines. 19% of respondents agree with the proposed investment but not with its bill impact and 2% do not agree with the investment. In addition, 32% of respondents would like to see more investment in this area, 21% less investment, 12% would like to remove investment and 35% would like to see no change in the investment in this area.
Stakeholder source	Business consumers and domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	Consumers are trading off between the environment and affordability
Source document	Acceptability 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 BP	Reinforces the existing BP conclusions.
Changes to the BP conclusions and proposed actions	No changes are needed. The majority of stakeholders find the current proposal on compensating landowners important. However, the appetite for a further increase in investment in this area is low.

Source: Frontier Economics

Figure 38 Supporting the local community – domestic consumers

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 3
New information	<p>Domestic consumers are willing to pay £4.79 per consumer per year to support current level of community schemes compared to no support and are willing to pay £6.85 per consumer per year to support current level of community schemes and additional funding to charities and other organisations compared to no support</p> <p>"Supporting local communities" has the fourth (of six) highest average rank (fourth most important), when ranking priorities, followed by minimising disruption to gas supply and minimising gas bill. Approx. 15% consumers rank supporting local communities as the highest priority.</p>	<p>Participants were asked to come up with suggestions of ways NGGT can help members of the public. Of the suggestions proposed, "encourage STEM subjects" ranked 2nd, followed by "work with others to help communities" which ranked 3rd and "employees to dedicate volunteer hours" came 5th (last).</p> <p>Other ideas that were proposed by the respondents included charity work, apprenticeships, education (e.g. on low carbon) and effective restoration of sites.</p>	<p>Consumers were presented with a number of options to vote on what type of community and charity work NGGT should focus on, on a scale of 1-5. Support was highest for work with vulnerable members of society, followed by tackling fuel poverty, promoting education (STEM), helping communities, with the generic goal of supporting charities falling last.</p> <p>Views differed across respondents with 36% respondents giving the highest rank to supporting vulnerable people, 38% supporting fuel poverty, 32% promoting education, 24% helping communities and 21% supporting charities.</p>	<p>Consumers were asked how NGGT's community and charity work should be funded and 45% of respondents felt costs should be shared between NG and consumers, 37% believed NG should pay and 7% thought costs should be paid by consumers.</p> <p>Results varied by age groups. 45-54 year olds were significantly more likely than average to expect NG to cover all costs (48%).</p>	<p>Consumers were asked what NG should do with any money made from selling excess electricity generated through renewable technologies. Consumers were asked to vote on 4 investments on a scale of 1-5. Of these, local projects focussed on energy efficiency or the environment were most selected, followed by donations to charities dealing with vulnerable or fuel poor households. Donating to a selected, but unspecified charity partner was the least favoured option.</p>
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	"Minimising the gas bill" and "minimising disruption to gas supply" have a higher rank (less important for consumers) compared to "supporting local communities".	No trade-offs across topics, consumers are simply stating preferences from a set of options provided.			

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 3
Source document	NERA/Explain WTP Study	Consumer immersion workshop - February 2019	Interviews with bespoke tool	Interviews with bespoke tool	Interviews with bespoke tool
Robustness	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.	The findings are relevant and representative. There are some issues with validity, as described in Section 3.
Relation to existing stakeholder evidence in BP	The high WTP for supporting the local community reinforces the existing Business Plan conclusions.			New area	New area
Changes to the BP conclusions and proposed actions	None required				

Source: Frontier Economics

Figure 39 Supporting the local community – other stakeholders

	Evidence 1	Evidence 2
New information	<p>The WTP survey reports that non-domestic consumers are willing to pay £46.65 per consumer per year or 1.45% of the change in the bill to support current level of community schemes compared to no support and are willing to pay £54.73 per consumer per year or 1.70% of the change in the bill to support current level of community schemes and additional funding to charities and other organisations compared to no support</p> <p>Only approx. 8% of respondents consider "supporting local communities" as the highest priority. It has the highest average rank (least important)</p>	<p>29% of stakeholders are very satisfied that NGGT's commitment on the real living wage is ambitious enough, 34% are satisfied, 2% are dissatisfied and 35% did not answer.</p> <p>27% said NG should expect its supply chain to set Science Based Targets (SBTs), 2% did not, 26% were unsure and 35% did not answer.</p> <p>45% are satisfied that NGGT's commitment to carbon reduction in the supply chain is ambitious enough, 9% are very satisfied, 9% are dissatisfied, 2% are very dissatisfied and 35% did not answer.</p>
Stakeholder source	Non-domestic consumers	Supply chain; Energy network operator; University
Diverse views or a consensus	"Supporting local communities" is of low relative importance for non-domestic consumers who give it the lowest priority on average, whereas domestic consumers gave this a higher priority.	Stakeholders agree to the different propositions posed with varying degree.
Trade-offs between priorities	Consumers have made trade-offs between environment, affordability and reliability. "Minimising disruption to gas supply" and "Minimising the gas bill" have a lower average rank (more important for consumers), with "minimising the gas bill" considered the most important of the three and "supporting local communities" the least.	Trade-offs between environment and affordability
Source document	NERA/Explain WTP Study	Responsible Procurement Plan webinar
Robustness	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are likely to be relevant but not representative.
Relation to existing stakeholder evidence in BP	Reinforces existing Business Plan conclusions.	Stakeholders are generally satisfied with the actions proposed by NGGT. But there was not clear and unambiguous support for SBTs.
Changes to the BP conclusions and proposed actions	None proposed. Despite the low priority ranking the WTP results confirm general support for NGGT's business plan proposals.	No changes. Stakeholders are largely satisfied with NGGT's commitment of supporting local employment and reducing carbon in the supply chain.

Source: Frontier Economics

7.1.2 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

The majority of domestic consumers find the July Business Plan proposals relating to environment and communities, and the associated bill increases acceptable. A significant proportion (around a fifth to a quarter) accept the proposals but not the bill increases.

This is backed up by the general finding that improving the environment (air quality, carbon emissions, local community and the environment) is very important for domestic consumers.

Non-domestic consumers see action on climate change as particularly important and major energy users noted that there was a societal obligation for action on methane.

Supporting the local community is of importance to stakeholders. However, views are not consistent across all stakeholder groups and evidence collected. Domestic consumers tender to support it, while other stakeholders offer less support.

Community schemes are considered generally considered less important by stakeholders (including domestic consumers) than initiatives to improve the environment. However domestic and non-domestic consumers are willing to pay more in this area.

Ideas supported by domestic consumers on ways NGGT can help the public resulted in suggestions similar to those currently employed / proposed by NGGT in the Business Plan.

The majority of domestic consumers believe that costs for NGGT's charity and community work should be shared between NGGT and customers. However, a small proportion of consumers also believe that costs should be borne entirely by NGGT.

Are there particularly diverse views or a consensus?

There is a consensus that action on environment and communities are important priorities. There are mixed views among consumers on the acceptability of bill increases.

Domestic and non-domestic consumers make different trade-offs between protecting the local environment and reliability and affordability. While domestic consumers gave protecting the local environment the highest priority, non-domestic consumers considered it as relatively less important.

How does this compare to the findings described in the July Business Plan?

This is in line with the stakeholder findings reported in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No major changes. More evidence on the approach NGGT has taken to secure cost efficiencies in this area could be included.

It may also be useful to set out where there are differences in views between domestic and non-domestic consumers.

How have trade-offs been made in reaching these conclusions?

Stakeholders care about protecting the environment and the majority accept the trade-offs NGGT is making between cost and action in this area.

Since a significant proportion of domestic consumers do not accept the associated bill increases, any further actions stakeholders take in this area would need to be carefully justified as cost-effective.

7.2 Air quality

This section addresses the question: 'How important is it for us to tackle the issue of air quality?'

NGGT is required to comply with air quality emissions legislation and to maintain local air quality. Investments to manage air quality and compressor emissions are associated with the largest spend within the environment topic. With new legislation tightening the requirements, we understand that some investment in the compressor fleet is needed to ensure compliance with legislation out to 2030.

7.2.1 Summary of new findings

Figure 40 How important is it for us to tackle the issue of air quality?

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
New information	Consumers consider air quality to be very important. Most respondents are willing to pay 50p more on an estimated bill of £9 (estimated amount of the bill that covers NGGT) annually towards improving air quality. This is considerably above the stated likely bill impact (£0.07 per annum) and hence suggests strong support for the quantum of activity proposed by NGGT.	Limited comment on this topic. One stakeholder advised keeping options open on compressors, as NG is doing. But it was not clear that this topic is a priority for industry.	66% of respondents agree with the proposed investment (as per the BP) and its impact on their bills (£0.07) in relation to improving local air quality around NG sites. 26% of respondents agree with the proposed investment but not with its bill impact and 2% do not agree with the investment. In addition, 44% of respondents would like to see more investment in this area, 19% less investment, 9% would like to remove investment and 28% would like to see no change in the investment in this area.	██████████ raised concerns that emissions might have increased across a region or the whole network because of a reduction of compression capacity.	One attendees asked about the consequences of losing 20% of compressors in terms of constraint risk for exit parties.
Stakeholder source	Domestic consumers	Industry / trade body ██████████	Domestic consumers	Government/regulator	Customers – exit
Trade-offs between priorities	Trade-offs between environment and affordability	No trade offs	Trade-offs between environment and affordability	Trade-offs between environment and affordability	Trade-offs between environment and reliability

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5
Source document	Consumer immersion workshop - July 2019	Overall BP engagement	Acceptability survey	Bilateral Engagement – [REDACTED]	[REDACTED] meeting
Robustness	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant and valid. However, representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.	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.	The findings are relevant and valid. However, representativeness might be limited.	
Relation to existing stakeholder evidence in BP	Reinforces the existing Business Plan conclusions				
Changes to the BP conclusions and proposed actions	No changes recommended.	Limited stakeholder input has been received from these entities, but a lack of response does not in our view provide a signal that change is needed, given the wider feedback received.	Given the sizeable proportion that signalled a desire for NGGT to go further, plus the findings from the WTP study, NGGT could consider options for going further in this area.	NGGT to consider if the presentation of further analysis or explanations are needed to respond to the concerns.	

Source: Frontier Economics

7.2.2 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

Domestic consumers consider air quality to be important and the majority agree with the proposed investments and its bill impact. A significant proportion (around a quarter) agree with the proposals, but not with the bill impact. There is also some support from domestic consumers for doing more on air quality than currently proposed, but specific actions are not specified.

Other stakeholders did not address this directly:

- Major energy users stressed the importance of keeping options open, in relation to compressors and concerns were expressed on the implications for constraints.
- [REDACTED] requested further information on some specific sites but did not comment more generally.

Are there particularly diverse views or a consensus?

There is a consensus that action in this area is important. There are mixed views among consumers on the acceptability of bill increases.

How does this compare to the findings described in the July Business Plan?

The new evidence is broadly in line with the stakeholder evidence findings described in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

NGGT could include more evidence on why the costs of action in this area are efficient.

How have trade-offs been made in reaching these conclusions?

The new evidence generally supports the actions set out in the July Business Plan. There is some support for going further. However, a significant proportion of consumers are not happy with the bill impact. Given the strong emphasis received on cost-effectiveness from stakeholders for the July Business Plan, National Grid should only go beyond the measures set out in the July Business Plan where further cost-effective options are available.

7.3 Vulnerable consumers

This section addresses the question: 'What is the role for NGGT for vulnerable consumers (current and future)?'.

Figure 41 Vulnerable consumers (domestic consumers)

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
New information	Domestic consumers are willing to support consumers in fuel poverty by paying £1.41 per consumer per year in order to provide them with information to help lower their energy bills. Domestic consumers are willing to pay £5.06 to provide information to lower the energy bills of those in fuel poverty and to fund/ finance their bill.	Consumers rank "helping the fuel poor and vulnerable" as the least important between "reliable supply of gas", "helping the move towards low carbon economy" and "keeping gas bills down". Respondents were also asked whether they would be willing to pay slightly more on their annual bill (less than £1) to help pay for "helping the move towards a low carbon economy", "ensuring a reliable supply of gas" and "helping the fuel poor and vulnerable consumers." Only 14% of consumers votes yes, with 64% voting no and 21% voting unsure.	Consumers consider fuel poverty to be a very important issue. However, they see the government, Ofgem and suppliers playing a bigger role. Results on whether consumers would be willing to pay 50p more on an estimated bill of £9 (estimated amount of the bill that covers NGGT) per year to help fuel poverty, were mixed though the majority agreed.	Consumers are willing to pay more to help consumers were willing to pay more to help "vulnerable and disadvantaged groups". However, the majority of consumers feel that social and environmental goals should be funded by Government or energy companies.
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	Consumers were explicitly trading off affordability with fuel poverty concerns in their WTP valuation.	Respondents gave reliability the highest importance, followed by environment, affordability and helping the vulnerable, in order.	Consumers were explicitly trading off affordability with fuel poverty concerns in their WTP valuation.	Consumers were explicitly trading off affordability with vulnerability concerns.
Source document	NERA/Explain WTP Study	Consumer immersion workshop - February 2019	Consumer immersion workshop - July 2019	UKERC
Robustness	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant and representative, but there are some issues with validity.

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
Relation to existing stakeholder evidence in BP	Reinforces the existing Business Plan conclusions			
Changes to the BP conclusions and proposed actions	No change needed.	No change needed.	While fuel poverty is important, stakeholders consider NGGT to be playing a less crucial role. This could be noted in the Business Plan.	No change needed.

Source: Frontier Economics

Figure 42 Vulnerable consumers – other stakeholders

	Evidence 1	Evidence 2
New information	Non-domestic consumers expressed no willingness to pay to support those in fuel poverty.	Major energy users believe fuel poverty is the obligation of other parties (suppliers) and distribution networks as they interact with consumers.
Stakeholder source	Non-domestic consumers	
Trade-offs between priorities	No trade-offs	No trade-offs
Source document	NERA/Explain WTP Study	Overall BP engagement
Robustness	The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.	The findings are relevant and valid. However, representativeness might be limited as this is the stated view of a single, albeit important, respondent and should be viewed in this context.
Relation to existing stakeholder evidence in BP	Unlike domestic customers, non-domestic customers do not clearly support NGGT's proposed steps on fuel poverty.	
Changes to the BP conclusions and proposed actions	NGGT could reflect the diverse views of stakeholders, in particular the differing views between domestic and non-domestic consumers, on fuel poverty.	

Source: Frontier Economics

7.3.1 Summary of conclusions

What new evidence is there on stakeholder views?

Domestic consumers are willing to pay a small additional amount to help fuel poverty. While most consumers and stakeholders agree that this is an important issue, many feel acting to help fuel poverty is not the responsibility of NGGT. This view is particularly strong among non-domestic consumers and major energy users.

Are there particularly diverse views or a consensus?

Consumers see this as an important area, but generally do not consider this as a high priority investment area for NGGT. However, domestic consumers are willing to pay a small amount to alleviate fuel poverty, while other stakeholders are not.

Both domestic consumers and other stakeholders agree that this area should receive support from other members in the industry (government, regulatory, network companies, etc.).

How does this compare to the findings described in the July Business Plan?

This reinforces the view in the July Business Plan and provides new information on consumer views on fuel poverty.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are required, but NGGT could document the divergent views between domestic and non-domestic customers.

How have trade-offs been made in reaching these conclusions?

None.

8 CYBER AND EXTERNAL THREATS

This section covers NGGT's response to security threats, including terrorism, criminality and vulnerability in information technology and operational technology systems.

We note that the UK Government sets the requirements for the appropriate levels of physical and cyber resilience that are to be achieved in the national interest and that this will be main driver for actions in this area.

In addition, the Government restricts what NGGT can say publicly about its current level of resilience and the specific measures we will take in the future to reduce vulnerability. Therefore, there are limits to the stakeholder engagement that is possible in this area.

This section addresses the question: 'Do our proposals meet your needs?'

8.1 Summary of position in the July Business Plan

Stakeholders input:

- Domestic consumers place a high priority on developing resilience to cope with a terrorist or cyber-attack.

NGGT's proposals for RIIO-2:

- to take proportionate measures to protect the integrity of the network in line with best practice, government and HSE requirements;
- to strengthen the ability of the gas transmission system to cope with and recover from malicious events that threaten GB energy supplies;
- to deliver the cyber resilience improvements agreed with the Competent Authority for the NIS Regulations;
- to deliver physical security upgrades at the sites required by BEIS, ensuring that all our PSUP solutions remain compliant with CPNI high level security principles;
- to comply with our legislative requirements;
- to monitor and report performance and adapt plans and delivery as circumstances change; and
- to pursue greater cost efficiency, deploying innovation and best practice where possible.

The plan includes £123.4m per year (21% of our RIIO-2 total costs) for this priority.

8.2 Summary of new findings

Figure 43 sets out the key findings from stakeholder engagement in this area.

Figure 43: Attitudes to the topic and acceptability of the proposals

	Acceptability	Consumer Immersion workshop	Interviews with bespoke tool
New information	<p>54% of consumers accepted actions for "Protecting the system from external hazards" for +£0.58. 35% agreed with the proposed investment but find the impact on bills not acceptable. 3% did not agree, 7% did not know.</p> <p>This acceptability is significantly lower than the average acceptability across subtopics of 68%. It is the lowest acceptability score among the subtopics.</p> <p>Participants were also asked to rank 6 investment areas (relating to safety, WES, external hazards, environment, innovation and efficiency) by order of priority. Respondents tended to rank "Protecting the network from external hazards" around the middle, with very few people saying that it should be the first order of priority</p>	<p>In a focus group exercise, participants indicated that cyber security should be high priority and is very important. When asked whether they would be willing to pay 50p more for cyber security, 5 people answered yes, 7 answered unsure, and 4 said no (note that the response of many participants was unclear from the focus group transcript). A common argument among those who answered no or unsure was that consumers shouldn't have to pay for cyber security; it is an expectation.</p>	<p>In a question on innovation, participants were asked how important certain topics were. They gave "Security" an importance score of 3.90 on a scale of 1-5. The leading topic (Reliability and Maintenance) received an importance score of 4.02 on average, while the lowest score was 3.72. 18-24 year olds were significantly less likely to place the highest level of importance to security (20% compared to sample average of 41%).</p> <p>In another question, participants were asked "What levels of protection should National Grid employ against external threats?". 68% of respondents answered "very high" or "high", and only 4% said that this shouldn't be a priority for National Grid. over 65s and respondents from Scotland were more likely to answer "very high", while respondents from London were more relaxed about the topic.</p>
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities	Trade-off between affordability and reliability		
Source document	Acceptability survey	Consumer immersion workshop	Interviews with bespoke tool

	Acceptability	Consumer Immersion workshop	Interviews with bespoke tool
Robustness	<p>The findings 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.</p> <p>As National Grid’s detailed plans in this area are not public, stakeholders had a limited opportunity to evaluate the acceptability of the proposals in earnest.</p>	<p>The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.</p> <p>The findings are relevant and representative. There are some issues with validity, as described in Section 3.</p>	<p>The findings are relevant and representative. There are some issues with validity, as described in Section 3.</p> <p>Note that the lack of variation between the importance scores indicates that respondents did not have strong preferences on average. The question comparing the level of security at National Grid to other industries is very complex, and is difficult to draw conclusions from</p>
Relation to existing stakeholder evidence in BP	No previous evidence on acceptability.	Affirms stakeholder input that informed the July business plan in that stakeholders consider protection against cyber and external threats an important area, however the low willingness to pay results are somewhat inconsistent with this.	Affirms stakeholder input that informed the July business plan in that stakeholders consider protection against cyber and external threats an important area
Changes to the BP conclusions and proposed actions	Stakeholders affirmed that protection against cyber and external threats are important but are somewhat less willing to pay for investments this area than they are in other areas.		

Source: Frontier Economics

8.3 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

The majority of consumers accept NGGT’s investment proposals to protecting the system from external hazards, along with their associated costs. However, the majority accepting this is significantly lower than for other areas, including for safety. More than a third of consumers accepted the proposals but did not accept the bill increase.

A significant proportion of respondents also responded ‘no’ or ‘unsure’ to a hypothetical willingness to pay question that related specifically to cyber security.

Is there a consensus among stakeholders?

35% of consumers were accepted the proposals to protect the system from external threats but were not willing to pay more. Discussion in the focus groups suggested that this may be because consumers see this as a basic requirement of NGGT, rather than something they should pay extra for.

How does this compare to the findings described in the July Business Plan?

This evidence reinforces the view that consumers see this area as important and adds additional evidence on the consumer acceptability of the specific proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are justified.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with the safety investments. However, given these investments are driven primarily by the need to comply with legislation there is not a case for reconsidering them.

9 WHOLE SYSTEM

This section covers NGGT's role in facilitating a sustainable whole energy system and driving decarbonisation in the gas industry

NGGT provided us with the following research questions:

- Do our proposals meet your needs? Was there anything further you were expecting?
- What are your views on what we are leading, facilitating and collaborating on?
- What is important to stakeholders for us to consider when we are investigating the different decarbonisation pathways?

9.1 Summary of position in the July Business Plan

Stakeholders input:

The July business plan was based on the following input from stakeholders:

- NGGT should take a leading role in driving and enabling the energy transition and drive the decarbonisation agenda forward.
- NGGT should assume an important role in the uncertain future of energy.
- NGGT should look for innovative solutions to meet the challenges posed by energy transition, for example in decarbonising heat.

NGGT's proposals for RIIO-2:

NGGT's proposals in the July Business plan to take the lead on:

- determining what the options are for Gas Transmission for the future decarbonisation pathways;
- developing the Gas Markets Plan, including developing changes to market codes and frameworks, enabling new fuels and participants to operate and enabling the decarbonisation of heat;
- innovation across the industry, working with other networks and industry partners to explore solutions in whole energy assets and markets to deliver consumer benefits;
- facilitating industry conversations to understand the most efficient options for the future whole gas system networks, market and frameworks; and
- collaborating with the gas distribution networks on the options regarding the transportation of hydrogen.

This requires the following investments:

- investing in skilled people;
- continue to invest in IT systems, making sure they are fit for the future; and
- replacing the current balancing and capacity system 'Gemini', making sure it is adaptable for change.

NGGT committed to investing 0.75% of revenue (~£6m p.a.) in business-as-usual innovation and proposed an innovation incentive allowance.

9.2 Acceptability

This section covers the question: our proposals meet your needs?

9.2.1 New findings

Figure 44: Do our proposals meet your needs

	Acceptability survey	One-to-one stakeholder interviews	Net zero polling
New information	A survey of 936 households found that acceptability of "working with other organisations to make the overall gas system cleaner" for a bill impact of +£0.06 is 67%. 24% agree with the proposed investments but find the impact on bills not acceptable. 2% do not agree, 9% don't know. The acceptability results for "Innovation projects to trial greener alternatives to natural gas" are 73%/24%/2%/7% respectively. These results are in line with the average acceptability across subtopics of 68%.	One-to-one stakeholder interactions suggested that stakeholders agreed that NGGT needs to take a leading, coordinating role in whole energy systems [redacted] but some thought it was not doing enough, for example, it wasn't on the H21 panel (from [redacted]). A specific CCS project was also mentioned that NG might engage with (Project Acorn) (from the [redacted]). Other participants mentioned various topics which they would like NG looking into, such the future of the network in 20-40 years, hydrogen, and LNG.	11 participants said that NGGT's proposals meet their needs, while 12 said it only somewhat met their needs.
Stakeholder source	Domestic consumers	One-to-one stakeholder interviews, input received from a representative of each of: Industry/trade body [redacted] Consumer interest group [redacted] and Regulator/government [redacted]	Energy network operators/owners; Customers (shipper); Regulator/government; Consultant / supply chain; Industry / trade body; Other energy industry; Other non-energy industry
Trade-offs between priorities (affordability, reliability, environment)	Consumers are happy to trade off action in this area with a bill increase.	None explicitly mentioned.	None explicitly mentioned.
Source document	Acceptability survey	Overall BP engagement, 1-to-1 interviews	"Our role in an uncertain energy future" poll

	Acceptability survey	One-to-one stakeholder interviews	Net zero polling
Robustness	When interpreting the acceptability results, it should be noted that this is a complicated topic that consumers have a limited understanding of, and National Grid’s proposals did not go into much detail on how spending on WES will impact customers. As such, customers might have found it difficult to evaluate whether the bill increase was justified.	The findings are likely to be valid and relevant, but not representative.	The findings are likely to be valid and relevant, but not representative.
Relation to existing stakeholder evidence in BP	The engagement indicates that while overall, stakeholders are supportive of National Grid’s proposals, though this is true more for consumers than other stakeholders, who said that there is not enough detail / too much uncertainty to be sure. Some stakeholders think National Grid could be doing more. Stakeholders are also keen to see National Grid involved in various research topics.		
Changes to the BP conclusions and proposed actions	National Grid might consider responding to some of the concrete initiatives mentioned by stakeholders to its proposals. It might also consider providing more information on the research topics that it is involved in..		

Source: Frontier Economics

9.2.2 Conclusions

What new evidence is there on stakeholder views?

The majority of domestic consumers accept the proposals and would be happy to accept a small bill increase in return. However, a significant proportion (around a quarter) accept the proposals, but not the bill increases.

This is consistent with UKERC research⁷, which finds that consumers would be willing to pay more for ‘increasing low carbon energy’.

Stakeholders are keen to know NGGT’s plans on net zero targets and would like to see a discussion of this in the business plan. They have asked NGGT to provide a clearer explanation of how their plan fits (or not) with the delivery of net zero, following recent legislation.

Is there a consensus among stakeholders?

A significant proportion of stakeholders state that these proposals only ‘somewhat’ meet their needs. Some stakeholders said that there is not enough detail / too much uncertainty to be sure, and some stakeholders think National Grid could be doing more.

⁷ <http://www.ukerc.ac.uk/publications/paying-for-energy-transitions.html>

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

New evidence is now available that shows that consumers and stakeholders are generally supportive of the proposals in this area.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

It is not clear that major changes to the proposals are required. There is broad stakeholder support for the actions NGGT has proposed.

However, stakeholders are keen to know NGGT's plans on net zero targets and would like to see a discussion of this in the business plan. This could include a presentation of the feasibility of current proposals under a net zero scenario, NGGT's transition plans to achieve carbon neutrality and the cost of such a transition including the impact on consumers.

If NGGT were to consider that aspects of its plans may impede future progress towards net zero, then the latest round of stakeholder feedback suggests that changes should be made.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with NGGT's proposals on net zero. However, there is strong support generally for action in this area from a wide range of stakeholders.

9.3 National Grid's role in leading, facilitating and collaborating

This section covers the question: 'What are your views on what we are leading, facilitating and collaborating on?'

9.3.1 New findings

	One-to-one stakeholder interviews	Net zero polling
New information	<p>One-to-one stakeholder interactions suggested that stakeholders agreed that NGGT needs to take a leading, coordinating role in whole energy systems (from ██████████ but some thought it was not doing enough, for example, it wasn't on the H21 panel (from ██████████). A specific CCS project was also mentioned that NG might engage with (Project Acorn) (from the ██████████</p> <p>Other participants mentioned various topics which they would like NG looking into, such the future of the network in 20-40 years, hydrogen, and LNG.</p>	<p>16 out of 25 participants agreed with NGGT's view of what they are leading, collaborating and facilitating on, and a further 6 agreed somewhat.</p> <p>11 participants said that NGGT's proposals meet their needs, while 12 said it only somewhat met their needs.</p> <p>When asked whether they agreed with NGGT's leadership and collaboration efforts, several participants mentioned that they are not certain that National Grid should put such a large emphasis on hydrogen and that it should make sure to explore other pathways as well. When asked whether they agreed with National Grid's proposals, participants brought up the same point, as well as noting that there is not enough detail / too much uncertainty to decide conclusively.</p>
Stakeholder source	<p>One-to-one stakeholder interviews, input received from a representative of each of: Industry/trade body (██████████) Consumer interest group (██████████) and Regulator/government (██████████)</p>	<p>Energy network operators/owners; Customers (shipper); Regulator/government; Consultant / supply chain; Industry / trade body; Other energy industry; Other non-energy industry</p>
Trade-offs between priorities (affordability, reliability, environment)	<p>None explicitly mentioned.</p>	<p>None explicitly mentioned.</p>
Source document	<p>Overall BP engagement, 1-to-1 interviews</p>	<p>"Our role in an uncertain energy future" poll</p>
Robustness	<p>The findings are likely to be valid and relevant, but not representative.</p>	<p>The findings are likely to be valid and relevant, but not representative.</p>
Relation to existing stakeholder evidence in BP	<p>The engagement indicates that overall, stakeholders are supportive of National Grid's proposals, though some said that there is not enough detail / too much uncertainty to be sure. Some stakeholders think National Grid could be doing more. Stakeholders are also keen to see National Grid involved in various research topics.</p>	
Changes to the BP conclusions and proposed actions	<p>National Grid might consider responding to some of the concrete initiatives mentioned by stakeholders to its proposals.</p> <p>It might also consider providing more information on the research topics that it is involved in..</p>	

Source: Frontier Economics

9.3.2 Summary of conclusions

What new evidence is there on stakeholder views?

The engagement indicates that overall, stakeholders are supportive of National Grid's proposals, though some said that there is not enough detail / too much uncertainty to be sure.

Some stakeholders are also keen to see National Grid involved in various specific research topics, including hydrogen, CCS, the future of the network in 20-40 years, and the future role of LNG.

Is there a consensus among stakeholders?

These issues were only mentioned by a small number of stakeholders.

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

National Grid might consider responding to some of the concrete initiatives mentioned by stakeholders to its proposals.

How have trade-offs been made in reaching these conclusions?

None

9.4 Decarbonisation pathways

This section covers the research question: 'what is important to stakeholders for us to consider when we are investigating the different decarbonisation pathways?'.

We present the findings in the following tables:

- attitudes to National Grid's role in decarbonisation (Figure 45);
- net zero targets (Figure 47 and Figure 48)

Figure 45 : Attitudes to National Grid’s role in decarbonisation

	Focus groups	Investor survey	Net zero polling	Acceptability survey
New information	<p>Out of four topics (reliable supply of gas, helping the move towards the low carbon economy, keeping gas bills down, helping the fuel poor and vulnerable), focus group participants rated the move towards low carbon economy the second most important responsibility of NG on average (behind reliable supply).</p> <p>The large majority of people also said that they would be willing to accept a small increase to their bills to support the move towards a low carbon economy.</p> <p>Others thought that decarbonisation should be NGGT’s responsibility already, and consumers should not have to pay extra.</p>	<p>In an investor survey, respondents through that National Grid has an important role to play in decarbonisation and it is well positioned to support these initiatives and renewables in general. Some also saw this area as an opportunity for investment.</p>	<p>18 out of 27 participants agreed that National Grid has a key role in achieving net zero, and they should collaborate with the industry, government and others. A further 7 participants agreed only somewhat.</p> <p>Some participants mentioned that Net Zero will be costly and this might not be consistent with the aim of driving down costs.</p>	<p>Participants were asked to rank 6 investment areas (relating to safety, WES, external hazards, environment, innovation and efficiency) by order of priority. Respondents were split on how important “Planning the energy system of the future” is; they were almost equally likely to place it at the top as the bottom. It received an average score of 3.7.</p>
Stakeholder source	Domestic consumers	Investors	Energy network operators/owners; Customers (shipper); Regulator/government; Consultant / supply chain; Industry / trade body; Other energy industry; Other non-energy industry	Domestic consumers
Trade-offs between priorities	The majority of consumers said they would be willing to accept a small increase in bills.	None apparent.	Trading off cost and environment.	Trading off all areas
Source document	National Grid Gas Transmission consumer immersion workshops (February and July)	National Grid Investor Audit (July 2019)	“Our role in an uncertain energy future” poll	Acceptability survey

	Focus groups	Investor survey	Net zero polling	Acceptability survey
Robustness	When discussing the topic, many participants seemed not well informed about NG's potential role in a move towards a low carbon economy. Many participants thought that its role was simply to reduce its own emissions.	This survey is relevant and valid. It was designed to be representative, but the number of respondents was relatively small.	This webinar provides a good snapshot of stakeholders' views. However, it has not been structured to be representative.	Due to the complexity of the topic, consumers had very limited information and they might lack the required expertise. This undermines the reliability of the results.
Relation to existing stakeholder evidence in BP	The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders find it important that National Grid take a facilitating/coordinating role in driving the decarbonisation agenda forward			
Changes to the BP conclusions and proposed actions	None required.			

Source: Frontier Economics

Figure 46: Approach to energy transition

	Interviews with bespoke tool	Willingness to pay report	Net zero polling
New information	Domestic consumers are split on the issue of how NGGT should approach decarbonisation – whether to invest now or to wait until more concrete proposals are on the table. In the same survey, stakeholders also said that running cost is the most important factor when considering changing the heating system in their home, Functionality, upfront cost, environment impact were ranked roughly equally important and the amount of disruptions was the least important.	WTP analysis found that alternative heating systems need to be significantly cheaper than gas boilers for them to be willing to change from the latter	Participants were asked who should bear the costs of the energy transition. 16 out of 23 answered that it should be current customers, while 4 said costs should be spread to future customers (3 did not answer).
Stakeholder source	Domestic consumers	Domestic consumers	Domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	Consumers are trading off all three priorities in their choice of heating systems.	Consumers are prioritising cost over the emissions from their heating systems.	

	Interviews with bespoke tool	Willingness to pay report	Net zero polling
Source document	Acceptability Phase 2 - survey	WTP	Net Zero Webinar (“Our role in an uncertain energy future” poll)
Robustness	<p>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.</p> <p>In the survey, participants were presented with a multiple choice question with one response option for “invest now” but two options for “invest later” which might skew the result towards the former answer.</p>	<p>The findings are generally relevant and representative. However, the specific monetary values should be treated with caution, given the issues associated with validity in Section 3.</p>	<p>The findings are generally to be relevant and valid, but not representative.</p>
Relation to existing stakeholder evidence in BP	The stakeholder engagement provides information on some specific aspects of National Grid’s decarbonisation plan.		
Changes to the BP conclusions and proposed actions	No changes recommended		

Source: *Frontier Economics*

Figure 47 Net zero targets – domestic consumers

Evidence 1	
New information	<p>Respondents to the survey were asked what target NGGT should set for carbon neutrality. 6 in 10 respondents favoured a more ambitious target than that set by the government, with 36% saying we should aim to be carbon neutral by 2030, 24% by 2040 and 26% by 2050 (government target).</p> <p>While most respondents are in support of NGGT setting carbon neutrality targets, 14% respondents said this shouldn't be a priority for NGGT or that they were unsure. There were some demographic and regional differences. For instance, 13% of over 55s felt that this is not a priority and respondents from the North East of England were significantly more likely than the average to support a 2030 target (56%).</p>
Stakeholder source	Domestic consumers
Trade-offs between priorities (affordability, reliability, environment)	No trade-offs discussed
Source document	Interviews with bespoke tool
Robustness	The findings are relevant and representative. There are some issues with validity, as described in Section 3.
Relation to existing stakeholder evidence in BP	It is a new area but is relevant to a wide range of questions on climate change since it requests a steer on NGGT's overall level of ambition on net zero.
Changes to the BP conclusions and proposed actions	The majority of stakeholders favour a more ambitious target on net zero. NGGT could consider a discussion on NGGT's targets for carbon neutrality to be presented in the Business Plan.

Source: Frontier Economics

Figure 48 Net zero targets – other stakeholders

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
New information	One stakeholder said that they would have expected NGGT to have anticipated net zero becoming law and to have plans in place which show how investments in the gas system today can deliver a net zero energy system by 2050 at the latest.	Should contribute to net zero at lowest cost and least disruption.	NGGT's role / vision on net zero should be included in the Business Plan for October. NGGT should also focus on own reduction of emissions.	Net zero goals need tough decisions and an element of leadership across all network companies. ██████████ would like to know the areas in the current plan that do not facilitate the net zero targets and the activities NGGT would need to undertake if a more challenging target was set as well as the cost of meeting such a target.
Stakeholder source	Environmental interest group	Industry / trade body (major energy users)	Industry / trade ██████████	Consumer interest group ██████████
Trade-offs between priorities	Stakeholders are requesting further clarity from NGGT on its net zero plans – the trajectory envisioned and the cost to implement changes and do more in this area			
Source document	Overall BP engagement	Overall BP engagement	Overall BP engagement	Overall BP engagement; ██████████ response to NGGT draft RII02 Business Plan
Robustness	The findings are relevant and valid. However, representativeness might be limited as these are the stated views of single, albeit important, respondents and should be viewed in this context.			
Relation to existing stakeholder evidence in BP	Net zero was not given specific attention in the July Business Plan.			
Changes to the BP conclusions and proposed actions	Stakeholders have requested a clearer understanding of NGGT's plan on net zero and its impact on them, as well as NGGT's wider stance on net zero targets.			

Source: Frontier Economics Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

Domestic consumers support NGGT's role in working with other organisations to make the overall gas system cleaner and the majority are willing to pay more on their bills for this. Domestic consumers also support "Innovation projects to trial greener alternatives to natural gas" and are willing to pay more for this.

Stakeholders (major energy users and a consumer body) agreed that NGGT needs to take a leading, coordinating role in whole energy systems.

Stakeholders are requesting further clarity from NGGT on its net zero plans – the trajectory envisioned and the cost to implement changes and do more in this area

Other stakeholders expressed the view that it is important to keep options open, rather than choosing a specific option (e.g. hydrogen).

National Grid investors agree that NGGT has an important role to play in decarbonisation and it is well positioned to support initiatives in this area.

Is there a consensus among stakeholders?

A significant proportion (around a quarter) of domestic consumers accept these proposals but are not willing to pay more.

A significant proportion of other stakeholders state that these proposals only 'somewhat' meet their needs. Some stakeholders said that there is not enough detail / too much uncertainty to be sure, and some stakeholders think National Grid could be doing more.

How does this compare to the findings described in the July Business Plan?

The new stakeholder engagement largely confirms the evidence that fed into the July business plan, i.e. that stakeholders and consumers find it important that NGGT take a facilitating/coordinating role in driving the decarbonisation agenda forward.

New evidence is now available that shows that consumers and stakeholders are generally supportive of the proposals in this area.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

As described above, where possible, more detail on the proposed actions should be provided. It may also be useful to respond to some of the specific suggestions on areas of focus.

How have trade-offs been made in reaching these conclusions?

A relatively significant proportion of domestic consumers were not happy with the bill increases associated with NGGT's proposals on net zero. However, there is strong support generally for action in this area from a wide range of stakeholders.

10 INFORMATION PROVISION

This section deals with information provision to the wider industry. Information provision plays an important part in helping businesses to operate efficiently, facilitating the smooth provision of gas to a variety of users and building consumer trust in NGGT's services.

This section covers the following research question: 'Do our proposals meet your needs?'

10.1 Summary of position in the July Business Plan

Stakeholder engagement to date identified the following points:

- There is a need for greater granularity, consistency and accuracy of data.
- Stakeholders are more interested in pulling data from National Grid rather than having it pushed.
- Some call for the ability to manipulate raw data directly through the use of application programming interfaces.
- More detailed analysis and transparency around National Grid balancing actions is also needed.
- Stakeholders want to continue engaging with National Grid about their changing needs.

In response, NGGT re-evaluated its position and suggested a set of proposals for RIIO-2:

- Improving open data sharing and governance across the energy industry and restricting access only in instances of security, privacy, legal or consumer risks.
- Collaborating and sharing data with network companies in order to build a wholistic system view.
- Investing in people and IT infrastructure to improve the data provision capabilities.
- Providing more transparency around National Grid operational performance.
- Carrying on listening to the different stakeholders on a continuous basis.
- Balancing the different stakeholder views by fixing upfront the allowances for information provision activities and openly managing the allocation of funds to deliver value.

10.2 Summary of new findings

Figure 49 Key findings on information provision

	Usage of data	Desired type of data provided	Awareness	Demand data
New information	Less than 10 of the 26 stakeholders surveyed use the data for their business activities. Some do not find it useful. Others are not aware of the type of data published.	Customers indicated the need for finer data, more historic information and gas composition information. Some also pointed out that it would be useful to be alerted about potential service interruptions.	Not all stakeholders were aware of the data provided by National Grid. Only 12 of the 26 respondents indicated that they are aware of the data provided.	Most customers use the day ahead and the D2-5 data, though one group of stakeholders felt the D1 was more important.
Stakeholder source	Major energy users, Customer (Shippers)	Major energy users	Major energy users, Customer (exit), Customer (shipper), Government	Customers- entry and exit
Trade-offs between priorities (affordability, reliability, environment)	No trade-offs were explicitly made.			
Source document	Major energy users survey			Ops forum
Robustness	<p>This survey was valid and relevant. However, it is not clear whether it was representative, given the relatively small sample.</p> <p>Out of 60 surveyed organisations, only 26 answered at least one question on information provision. It remains unclear whether the organisations that did not provide any answers are not aware of the data or do not find it useful.</p>			Valid and relevant, but not necessarily representative
Relation to existing stakeholder evidence in BP	Reinforces the acknowledgment that data is useful for some businesses and that they would like to see more data being shared.	Consistent with the July Business Plan, there is a general call for greater data granularity.	New contextual information	
Changes to the BP conclusions and proposed actions	No changes.	No changes.	Reported low awareness paired with general low rate of response may indicate the need to better inform stakeholders about NGGT's data.	Customer views in this area could be noted.

Source: Frontier Economics

10.3 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

Stakeholders did not comment directly on the acceptability of NGGT's proposals in this area. The new evidence confirms that the data provided by NGGT is useful in some major energy users' day-to-day operations.

Some stakeholders would like data to be provided with greater frequency or more detailed information.

The survey suggests that not all major energy users are aware of NGGT's data provision.

Is there a consensus?

A variety of views were collected from the stakeholders consulted.

How does this compare to the findings described in the July Business Plan?

The findings are broadly aligned with proposals in the July Business Plan.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

Given the relatively low degree of awareness about NGGT's data provision, NGGT could consider options to improve their communication with stakeholders about information provision.

How have trade-offs been made in reaching these conclusions?

Given the data is useful for some customers and energy industry participants, there is a good case for NGGT to continue providing it. However, the data is not useful to all those surveyed. To maximise the benefit of this provision, it may make sense to NGGT ensure relevant stakeholders are aware of what is offered.

11 EFFICIENT AND AFFORDABLE

This section focuses on customers' perception of the affordability of NGGT's services. The following research questions are covered:

- Do our proposals meet your needs?
- How should we balance cost and risk between current and future consumers?

11.1 Summary of position in the July Business Plan

Stakeholder views

Stakeholder engagement for the July Business Plan identified the following points:

- Keeping energy bills affordable is an important priority for consumers.
- Stakeholders expect National Grid to expertly manage the costs in their interests. They trust National Grid in their actions although they still value transparency.

Proposals

NGGT proposed the following:

- National Grid will remain efficient by continuing to put their external expenditure through competitive tendering processes, undertaking extensive benchmarking and following strict governance procedures for capital investments.
- It will make efforts to cut today's costs of operating activities by 13% by the end of RIIO-2. This will however be more than offset by increased spending on asset resilience and cyber security.
- The impact on household bills will be kept at or below RIIO-1 level.

11.2 Acceptability

There have been new findings in two areas:

- the acceptability of the bill increases associated with NGGT's Business Plan (Figure 50); and
- the responsibility of NGGT for affordability of bills more generally (Figure 51).

Figure 50 Acceptability of increases

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
New information	Domestic and non-domestic consumers stated that NGGT’s services are affordable and provide value for money. The proposed investment and bill increases are acceptable. Participants noted however, that these may not be affordable for vulnerable customers such as pensioners or low income families.	The majority of domestic consumers found the plan to be good value for money. 35% felt that the plan was very good value for money and 40% felt that it was good value for money. 18% thought the plan was neither good nor poor value for money. 5% felt the plan was either poor value for money or very poor value for money. The vast majority thought they would not find it difficult to pay the gas transmission bill with the increase proposed in the Business Plan, although 20% said they would struggle at least sometimes. The average acceptable change by 2026 was very high relative to today’s bill (£11, with a median of £5) though almost half of respondents indicated no opinion or preferred not to answer	The majority of non-domestic consumers found the plan to be good value for money. 20% felt that the plan was very good value for money and 40% felt that it was good value for money. 30% thought the plan was neither good nor poor value for money. 7% felt the plan was either poor value for money or very poor value for money. For business consumers the average maximum acceptable change in bill was +7% (on current amount paid). This is proportionately lower than the maximum acceptable change in bill for domestic consumers. 9% of non-domestic consumers said their main reason for supporting the Business Plan proposals was because the change in their bill was affordable and	Concerns were expressed about the risks of rising exit charges starting a vicious cycle. There was also an expectation that charges will come down in the final agreement with Ofgem.	People are generally willing to accept costs associated with the energy transition (that is, the delivery of a low carbon, reliable and affordable energy system).	75% of people are concerned about steep rises in energy prices in the future (in the next 10-20 years).

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
		<p>the question.</p> <p>Reasons for finding the Business Plan unacceptable mainly related to financial considerations, including objections to paying a higher bill (21%); energy companies making too much profit (21%).</p> <p>18% of domestic consumers said their main reason for supporting the Business Plan proposals was because the change in their bill was affordable and 8% said it was because the proposals are good value for money.</p>	<p>10% said it was because the proposals are good value for money.</p>			
Stakeholder source	Business consumers (micro and small-sized) and domestic consumers	Domestic consumers	Non-domestic consumers	Stakeholders including customers (entry and exit), industry bodies and supply chain	Domestic consumers	Domestic consumers
Trade-offs between priorities	Consumers are broadly happy with the trade-offs between affordability and other priorities being made in the Business Plan.			None mentioned	Consumers are happy to trade off affordability with goals for the energy system.	None given
Source document	Acceptability Phase 1	Acceptability survey Phase 2	Acceptability survey Phase 2	NTS charging methodology forum	UKERC	PAT
Robustness	The findings are	The findings are	The findings are	The findings are	The findings are	The findings are

	Evidence 1	Evidence 2	Evidence 3	Evidence 4	Evidence 5	Evidence 6
ss	relevant and representative for domestic customers. However, there are some issues with validity. NGGT's cost to consumers is a relatively small number when contrasted with the overall energy bill.	relevant and representative for domestic customers.	relevant and representative for non-domestic customers.	relevant and valid, but engagement was not designed to be representative.	relevant and representative for domestic customers. However, there are some issues with validity.	relevant and representative for domestic customers. However, there are some issues with validity.
Relation to stakeholder evidence in BP	Reinforces the evidence that affordability is important for consumers and that overall, but the evidence suggests that consumers are satisfied with the overall affordability of NGGT's proposals.			Customers are concerned about exit charges and expect them to fall.	Reinforces the evidence that affordability is important for consumers but that they are also willing to pay for the energy transition.	Reinforces the evidence that affordability is important for consumers
Changes to the BP conclusions and actions	None required			This concern and the risk of the vicious circle could be acknowledged.	None required	

Source: Frontier Economics

Figure 51 NGGT’s responsibility for affordability

	NGGT's responsibility for affordability	NGGT's responsibility for affordability
New information	Consumers feel that keeping the gas bills down is not the main responsibility of National Grid – reliability of gas supply and moving towards low carbon economy takes precedence.	Customers find affordability very important but given that NGGT’s costs make up a small part of the overall bill, there isn’t much scope for intervention. Some respondents stated that responsibility for keeping bills low should lie with suppliers.
Stakeholder source	Domestic consumers	Domestic consumers:
Diverse views or a consensus	No visible split.	Broad agreement. Respondents in C2DE groups were more likely to highlight the role of suppliers in respect of affordability.
Trade-offs between priorities (affordability, reliability, environment)	Consumers prioritised reliability and environment over affordability.	Most consumers felt that that safety and reliability is more important than affordability.
Source document	Consumer listening	Consumer immersion
Robustness	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.
Relation to existing stakeholder evidence in BP	Reinforces existing evidence and supports the affordability of planned actions.	
Changes to the BP conclusions and proposed actions	None required	

Source: Frontier Economics

11.2.1 Conclusions

What new evidence is there on stakeholder views?

The evidence suggests that domestic and non-domestic consumers find the increase in the bill associated with the proposals in the July Business Plan to be acceptable.

Business consumers (small and micro) and domestic consumers also view NGGT’s services as providing value for money. However, we note that consumers may find it difficult to comment meaningfully on this, given the very small contribution of NGGT’s activities to the overall gas bill.

The fact that consumers (domestic, and small and large non-domestic consumers) are willing to pay more across a range of service areas, suggests that NGGT’s proposals are affordable.

Affordability remains important for domestic consumers. However, consumers do not necessarily view affordability as NGGT's responsibility. For example, they may see this as being more the responsibility of suppliers.

Affordability is also important to major energy users, and they suggested that greater emphasis is placed on communicating the bill impact of changes for non-domestic users.

Is there a consensus?

Yes.

How does this compare to the findings described in the July Business Plan?

- These findings reinforce the conclusions that:
 - affordability is important for consumers; and
 - consumers are generally happy with NGGT's performance in this area.
- The fact that they find the bill increase associated with the proposals in the July Business Plan to be acceptable is new information that supports the July draft.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No significant changes to the Business Plan are recommended, though it may be useful to present more information on cost impacts for non-domestic customers, where possible.

However, it may be useful to test the conclusion on affordability, using a different metric to annual bill increases. For example, the total cost could be presented to consumers, and compared to the cost of representative investments in education or health.

How have trade-offs been made in reaching these conclusions?

It is clear on the one hand that consumers and stakeholders are very concerned about affordability, and on the other hand that they are generally happy with NGGT's performance in this area. The overall conclusion is that consumers and stakeholders are accepting of NGGT's proposals in this area.

11.3 Trade-offs between now and the future

Figure 52 Balance of cost and risk between current and future consumers (Part 1)

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
New information	<p>This research finds a strong preference for costs for asset demolition and new gas equipment to be borne by current consumers, even if this means bills go up now and down in future.</p> <p>Fairness should be the main reasons not to pass on costs.</p>	<p>Major energy users expressed concerns about any reduction in the depreciation period.</p> <p>██████████ asked about the impact such a move would have on bills.</p> <p>This was also raised by one attendee at ██████████ meeting, who said that power stations would closer earlier if charges are higher.</p>	<p>Customers expressed concerns about a reduction in the depreciation period on the basis that that would involve paying now for assets that future customers should be paying for.</p>	<p>When asked about who should pay for the costs of the energy transition, a significant majority of stakeholders said it should be current consumers.</p>
Stakeholder source	Domestic consumers	Major energy users, Government. ██████████(Customers -exit)	Customers (entry and exit)	Energy network owner or operator; Gas Distribution network; Customer (Shipper/Supplier); Regulator or government; Supply chain or consultant; Industry or trade body; Other energy industry; Other non-energy industry
Trade-offs between priorities	Customers are trading off current vs future bills and intergenerational fairness			
Source document	Deliberative research	Bilateral engagement ██████████ meeting	NTS charging methodology forum	Webinar
Robustness	This research is relevant, but in common with most focus group-type discussions, there are issues with representativeness and validity	These findings are relevant and valid, but not representative.	These findings are relevant and valid, but not representative	These findings are relevant but not representative.

	Evidence 1	Evidence 2	Evidence 3	Evidence 4
Relation to stakeholder evidence in BP	Provides new information			
Changes to the BP conclusions and proposed actions	Consumer and customer preferences should be noted			

Source: Frontier Economics

Figure 53 Balance of cost and risk between current and future consumers (Part 2)

	Evidence 5	Evidence 6	Evidence 7	Evidence 8
New information	Given the commitments to 'net zero' emissions by 2050, there is uncertainty about the scope of the network that will be needed in the future. Any current investments into the gas grid need to consider the impact on consumers now and in the future. [REDACTED]	Around 10% of consumers felt that costs should fall on current customers, and a similar proportion felt that costs should primarily fall on future consumers. The remainder felt that energy companies and Government should be responsible.	Across all focus groups all except for one participant agreed with the statement that that costs associated with the installation of new gas assets from 2021 should be borne by current customers. The participants of the study stating that fairness should be the main reasons not to pass on costs.	The main reason for finding the Business Plan acceptable was they mean a better future for future generations for 11% of domestic and 11% of non-domestic consumers.
Stakeholder source	Consumer interest group	Domestic consumers	Domestic consumers	Domestic and non-domestic consumers
Trade-offs between priorities	The relevant trade-off is supply security now and affordability in the future	Customers are trading off current vs future bills and intergenerational fairness	In this regards, environmental concerns and future affordability were more important than current affordability concerns	Customers are trading off current vs future bills and intergenerational fairness
Source document	Bilateral Engagement - [REDACTED]	UKERC	Deliberative research on asset management	Acceptability – Phase 2

	Evidence 5	Evidence 6	Evidence 7	Evidence 8
Robustness	These findings are relevant but not representative.	The findings are relevant and representative, but there may be some issues with validity.	The findings are relevant but less likely to be representative or valid given the risk of bias described in Section 3.	The findings are relevant and representative.
Relation to stakeholder evidence in BP	New information			
Changes to the BP conclusions and proposed actions	No changes required			

Source: *Frontier Economics*

11.4 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

When asked about who should pay for the costs of the energy transition, a significant majority of stakeholders said it should be current consumers.

Domestic consumers also have a strong preference for costs for asset demolition and new gas equipment to be borne by current consumers. They hold this view on the understanding that this would mean that gas bills today will go up, but gas bills in the future will go down. This could be interpreted as support for a reduced depreciation period. They cited fairness as a driver for this view.

In contrast, major energy users expressed concerns about a potential shift of greater costs to current consumers. In particular, they were concerned about the impact that any reduction in the depreciation period could have, given that this would shift costs more costs on to current consumers.

Is there a consensus?

There is some divergence with respect to the ideal split of costs between future and current consumers. Major energy users had concerns about transferring more costs to current consumers. Other stakeholders and domestic consumers felt that current energy consumers should pay more for costs that are being incurred now.

How does this compare to the findings described in the July Business Plan?

This provides new information on consumers preferences on the split of costs between current and future consumers.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes.

How have trade-offs been made in reaching these conclusions?

Domestic consumers believe it is fair for them to bear the costs of current assets and the energy transition. While affordability concerns for major energy users should be considered, the views of domestic consumers could be given more weight on a question related to intergenerational fairness.

12 SAFETY

This section covers NGGT's activities to keep the public, its employees and other people who work on or around its assets safe from the hazards inherent in the business. In particular, failure to supply gas and major uncontrolled release of gas from the high-pressure network, are both potential threats to life and property.

We note that most of NGGT's safety-related activities are driven by compliance with legislation and application of established best practices and therefore the level of future work is not open to direct influence by customer or consumer preferences.

This section addresses the following research question: 'Do our proposals meet your needs?'

12.1 Summary of position in the July Business Plan

Stakeholder input:

- Stakeholder consistently safety should be a top priority. They expect NGGT to be as safe as possible in all its activities
- Stakeholders are aware of the risks to life and disruption to gas supplies associated with our operation.

NG's proposals for RIIO-2:

- It will be important during RIIO-2 that NGGT address the issues of ageing assets, ensuring they are safe now and into the future.
- NGGT will maintain its world-class level of safety while continuing to pursue its goal of zero harm.
- NGGT will continue to comply with legislation through routine and preventive safety activities.
- NGGT will spend £14.3m per year on the routine and preventive safety activities described in this priority. This compares to £15.8m per year during RIIO-1.

Summary of new findings

Figure 54 sets out new findings in this area.

Figure 54: Attitudes towards safety and acceptability of the proposals

	Acceptability survey	Interviews with bespoke tool
New information	<p>72% of domestic consumers accept the proposed investments in "Maintaining compliance with safety standards and environmental regulation" along with the bill impact. 19% agree with the proposed investment but find the impact on bills not acceptable. 3% do not agree, 7% don't know (The exact bill impact was not specified in the research piece) This is slightly higher than the average acceptability across subtopics of 68%,</p> <p>The proportion of consumers that accept "Maintaining the condition of pipes and equipment" for +£0.47 is 62%. 28% agree with the proposed investment but find the impact on bills not acceptable. 3% do not agree, 7% don't know. This is lower than the average acceptability across subtopics of 68%. It is the topic with the second lowest acceptability after "protecting the system from external hazards"</p> <p>Participants were also asked to rank 6 investment areas (relating to safety, WES, external hazards, environment, innovation and efficiency) by order of priority. Respondents overwhelmingly thought that "Ensuring a safe and reliable network" was very important, with 40% of respondents thinking it's the most important and 80% putting it in the top 3.</p> <p>For 16% of domestic consumers and 25% of non-domestic consumers, safety and reliability was their main reason for supporting the Business Plan.</p>	<p>Participants who were asked the question "In what areas should National Grid replace equipment and increase maintenance work?" rated "Health & Safety" the most important area on average, with a score of 4.03 on a scale of 1-5. The other options were "Reliability", "Environment" and "Transport". Respondents over 24 and those in Scotland were significantly more likely to rate "Health and Safety" and a top priority compared to others</p> <p>In another question on innovation, participants were asked how important certain topics were. They gave "Safety and engineering" an importance score of 4.00 on a scale of 1-5. The leading topic (Reliability and Maintenance) received an importance score of 4.02 on average, while the lowest score was 3.72. Over 65s were significantly more likely (52%), while 18-24 year olds were significantly less likely (32%) to place the highest level of importance on "Safety and engineering".</p>
Stakeholder source	Domestic and non-domestic consumers	Domestic consumers
Trade-offs between priorities	The majority of consumers are happy to accept a bill increase in return for investments in safety.	Participants prioritised safety over environment.
Source document	Acceptability Phase 2 - survey	Interviews with bespoke tool
Robustness	<p>The findings are relevant and representative for domestic customers.</p> <p>However, there are some issues with validity as consumers may find it difficult to comment on very small bill increases.</p>	<p>The findings are relevant and representative. There are some issues with validity, as described in Section 3.</p> <p>The limited variation in average scores indicates that consumers might not have had strong preferences overall.</p>
Relation to existing stakeholder evidence in BP	Confirms existing research on the importance of safety as a topic.	

	Acceptability survey	Interviews with bespoke tool
Changes to the BP conclusions and proposed actions	No changes required	

Source: Frontier Economics

12.2 Summary of conclusions from the triangulation

What new evidence is there on stakeholder views?

The majority of domestic consumers accept NGGT's Business Plan proposal and the associated bill increase, though a significant proportion of domestic consumers (19%) did not find the bill impact acceptable.

For 16% of domestic consumers and 25% of non-domestic consumers, safety and reliability was their main reason for supporting the Business Plan.

Consumers also indicate that health and safety is an important area for asset replacement.

Is there a consensus among stakeholders?

There is strong consensus on the importance of safety.

How does this compare to the findings described in the July Business Plan?

This reinforces the existing view that safety is a priority for stakeholders. It also adds new information on the acceptability of the July Business Plan proposals.

Based on this new evidence what changes to the Business Plan conclusions and proposed actions are justified?

No changes are required.

How have trade-offs been made in reaching these conclusions?

Given these investments are driven primarily by the need to comply with legislation there is not a case for reconsidering them.

ANNEX A DESKTOP RESEARCH

ANNEX A DESKTOP RESEARCH FINDINGS

Research question	Evidence stated	Source document
Is there a mindset that investment in gas is wasted as there is no future?	No evidence available from sources.	
Attitudes to balancing payment between current and future customers	<p>There is a public willingness to accept between 9-13% of energy bills to go towards environmental and social levies.</p> <p><i>"The UK Committee on Climate Change estimates that 15% of bills will need to go towards levies by 2030 to meet emissions reductions required by the fifth carbon budget approved by Parliament in 2016. Only one out of five survey respondents found levies this high acceptable."</i></p> <p><i>"Concerns were also voiced regarding future cost increases in the name of energy transitions (e.g. additional or increased levies on bills) and whether these would be visible in the context of a currently opaque system. Some group members expressed scepticism that this money would be passed on by energy companies and/or spent appropriately by government."</i></p>	UKERC
	75% of people are concerned about steep rises in energy prices in the future (in the next 10-20 years).	PAT
Trade-offs between the 3 consumer priorities, is "green" the no.1 goals for consumers, valued above reliability?	<p>People consider all three goals relevant – affordability, reliability and switching to low-carbon energy. However, there is a particularly strong emphasis on affordable and reliable energy, with environment coming in third. (Please see chart below)</p> <p>The most important consideration in changing a heating system for people is - saving money on bills (43%); switching to a more environmentally friendly heating system (33%) and having a more reliable heating system than the current one (19%).</p>	UKERC
		PAT

Research question	Evidence stated	Source document
How to ensure fairness in the future of heat - so no one is left behind	The Sustainability First report does not make a direct reference to the fairness aspect of decarbonisation with respect to vulnerable customers. However, it does indirectly imply this through the following statements: <i>"The decarbonisation of heat could also have significant impacts on equality (for vulnerable customers) depending on the approach and where costs fall";</i> <i>"Ensure they (energy suppliers and networks) think about the implications of key decisions on different customer segments"</i>	Sustainability First
The role of gas in a net zero world	The question is fairly technical to ask consumers. No evidence available from sources.	
What does trend and public attitude research tell us about how the views of future consumers may change?	No evidence available from sources.	
Future role of hydrogen and how it interacts with other options for decarbonisation	No evidence available from sources.	
How is climate risk considered (from the perspective of migration, adaptation, avoided future costs and stranded assets)?	69% of people are concerned that the UK is not investing fast enough in alternative sources of energy; 65% of people are concerned about the UK becoming too dependent on energy, specifically gas, from other countries;	PAT
What does the psychological research into people's values about the energy transition tell us? Specifically, in respect of the role of gas	There isn't any specific evidence on the role of gas. On energy transition more generally, the following pieces of evidence are relevant: 80% of people are concerned about climate change; 63% of people support CCS in the UK; 74% of people agree that renewable energy industries and developments provide economic benefits to the UK; 64% of people would be happy to have a large scale renewable energy development in their area; 47% of people will likely join a heat network if given the opportunity; 14% of people are likely to install an air source heat pump in their home over the next few years; 8% of people are likely to install a ground source heat pump in their home over the next few years; 7% of people are likely to install a biomass boiler in their home over the next few years; 13% of people are likely to install solar thermal panels in their home over the next few years.	PAT

Source: Frontier Economics

ANNEX B RESEARCH QUESTIONS PROVIDED BY NGGT

Figure 55 List of research questions

Topic	Research question
Business plan and incentives	Do our proposals meet your needs? How acceptable is our plan to you?
	Are you happy with our draft proposals for incentivisation during our next price control?
	How should we balance cost and risk between current and future consumers?
Network capability	Do our proposals meet your needs?
	Do our metrics give you useful information on the current and future capability of the gas transmission network?
	Are the levels of risks that consumers are exposed to suitable now and in the future?
	How should we balance the interactions across the 3 consumer priorities now and in the future?
Gas On/Off	Do our proposals meet your needs?
Asset Health	Do our proposals meet your needs?
Connections	Does our draft plan address your needs of us for the RIIO-2 period?
Environment	Do our proposals meet your needs?
	How important is it for us to tackle the issue of air quality?
	What is the role of NGGT for vulnerable consumers (current and future)?
Cyber and External threats	Do our proposals meet your needs?
Asset Health	Do our proposals meet your needs?
	Was there anything further you were expecting?
	Do stakeholders support the delivery of stand-alone projects in RIIO-2 that have been shown to be cost beneficial compared to an ongoing asset health approach? i.e. Bacton
Gas On/Off	Do our proposals meet your needs?
	Was there anything further you were expecting?
Incentives	Are you happy with our draft proposals for incentivisation during our next price control?
Whole system	Do our proposals meet your needs?
	What are your views on what we are leading, facilitating and collaborating on?
	What is important to stakeholders for us to consider when we are investigating the different decarbonisation pathways?
Information provision	Do our proposals meet your needs?
Connections	Does our draft plan address your needs of us for the RIIO-2 period?
Efficient and Affordable	Do our proposals meet your needs?
	How should we balance cost and risk between current and future consumers?
Safety	Do our proposals meet your needs?

Source: <Insert Source or notes>

ANNEX C SOURCE MATERIAL PROVIDED BY NGGT

Figure 56 List of sources

Title	Author	Date	Referred to in the report
Estimating Electricity and Gas Transmission Consumers' Willingness to Pay for Changes in Service during RIIO2	NERA/Explain	Jun-19	NERA/Explain WTP Study
Consumer immersion workshop – results from table exercises	NGGT	Feb-19	Consumer immersion workshop - February 2019
Consumer Workshop Focus group transcript T1	NGGT	Feb-19	
Consumer Workshop Focus group transcript T2	NGGT	Feb-19	
Consumer Workshop Focus group transcript T3	NGGT	Feb-19	
Consumer Workshop Focus group transcript T4	NGGT	Feb-19	
Major users survey raw data	NGGT	Jul-19	Major energy users survey
NGG narrative - explaining the energy system	Truth	Jul-19	
Understanding Reliability - Cultural Analysis for National Grid	Canopy	May-19	Understanding Reliability
Responsible & Sustainable Business in the UK - Cultural analysis for National Grid	Canopy	Apr-19	Responsible & Sustainable Business in the UK
Consumer engagement strategy for National Grid - WBS presentation	Warwick Business School	Mar-19	
Consumer engagement strategy for National Grid - WBS report	Warwick Business School	Mar-19	
Investor survey	NGGT	Jul-19	Investor survey
Consumer immersion workshop - combined transcripts	NGGT	Jul-19	Consumer immersion workshop - July 2019
Pay now / pay later - Gas asset management research	Truth	Aug-19	Deliberative research on asset management
Transcript - Edinburgh 6th Aug 2019 Group 1	eftec / ics	Aug-19	
Transcript - Edinburgh 6th Aug 2019 Group 2	eftec / ics	Aug-19	

Triangulation of stakeholder engagement outputs: Gas Transmission

Title	Author	Date	Referred to in the report
Transcript - Sutton Coldfield 8th Aug 2019 Group 3	eftec / ics	Aug-19	
Transcript - Sutton Coldfield 8th Aug 2019 Group 4	eftec / ics	Aug-19	
Acceptability interim results - 30.08.19	eftec / ics	Aug-19	Acceptability study
Acceptability summary stats - interim results 02.09.19	eftec / ics	Aug-19	
October build engagement capture	NGGT	Aug-19	Overall BP engagement
Network capability poll results	NGGT	Aug-19	
National Grid Service Valuation Research Results (slider)	Explain	Aug-19	Interviews with bespoke tool
Interim results for slider	Explain	Aug-19	
Network capability usage report - 20.08.2019	NGGT	Aug-19	
Network capability usage report - 27.08.2019	NGGT	Aug-19	
27 August 2019 - Network Capability and Incentives Webinar	NGGT	Aug-19	Network capability webinar
██████████ response to NGGT draft RII02 Business Plan - August 2019	██████████	Aug-19	██████████ response to NGGT draft RII02 Business Plan
Our role in an uncertain energy future webinar results	NGGT	Aug-19	“Our role in an uncertain energy future” poll
Responsible Procurement Plan webinar results	NGGT	Aug-19	Responsible procurement plan webinar
██████████	NGGT	Sep-19	
Email on CECS Review with ██████████	NGGT	Aug-19	Bilateral Engagement – ██████████

Source: Frontier Economics

