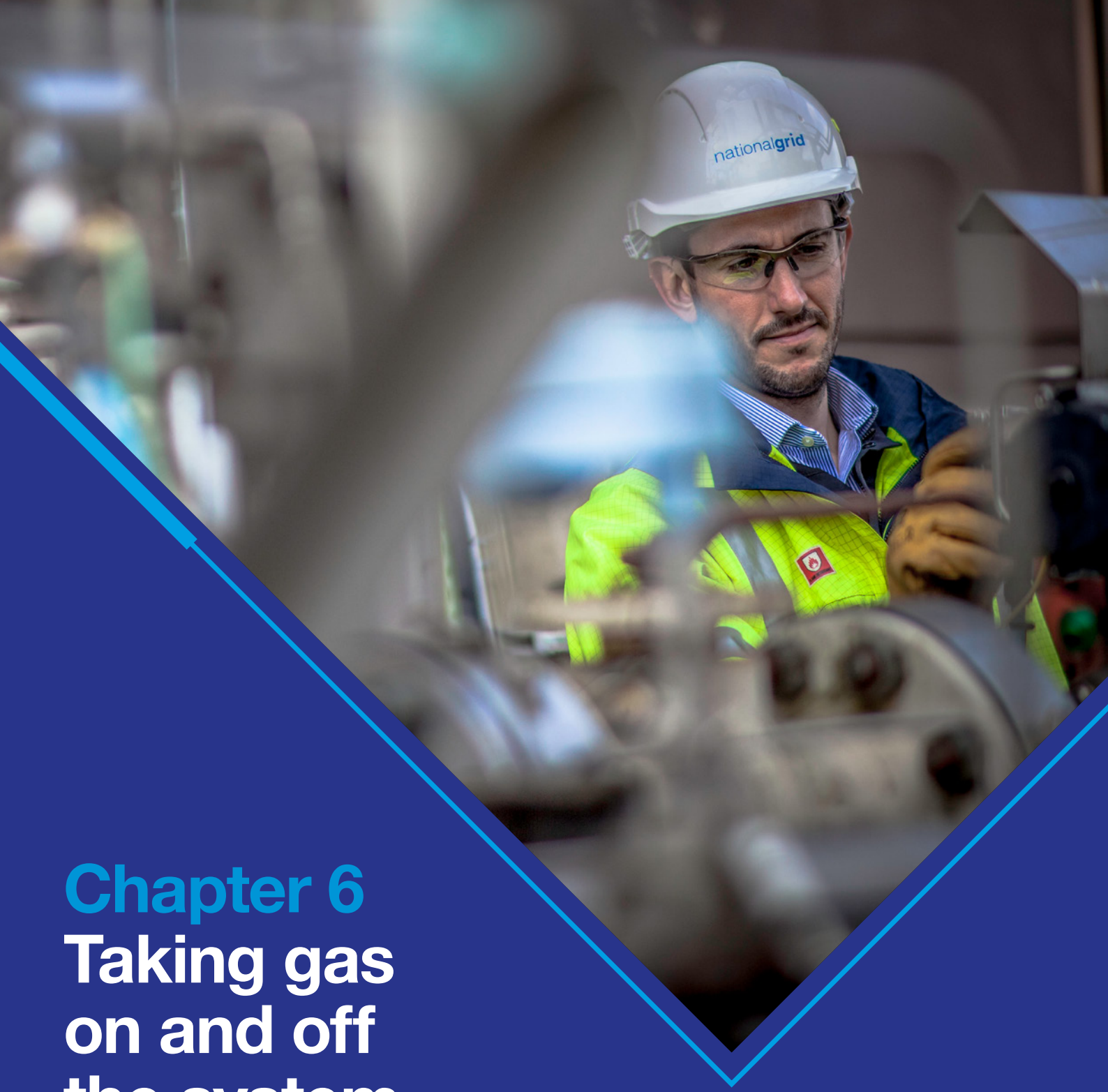


Chapter 6
Taking gas on and off the system

I want to take gas on and off the transmission system where and when I want

Gas Transmission

nationalgrid

6. I want to take gas on and off the transmission system where and when I want

Summary
Our stakeholders value being able to flow gas without restriction. They want to be able to alter the location, volume and profile of their gas flow in response to prevailing market conditions. We must ensure we have the right gas transmission system and commercial framework to meet the needs of both stakeholders and consumers.

Working with stakeholders, we will define network capability so that it covers the range of outputs our stakeholders want and need. The capability our stakeholders require will then drive our business planning. Taking this approach means we will only incur costs where they are required to meet stakeholder needs, or to keep the desired options open for the future.

We use the following principles to underpin our thinking[1]:

- We believe there is a long-term future for gas and the GT Network to at least 2045 and beyond. This is based on timescales to decarbonise heat and limitations of alternative energy sources for industry. It also factors in limited alternatives to gas-fuelled power stations for large-scale flexible generation.
- We recognise there are a range of views over the long-term role of gas and need for the gas transmission system. Until the exact pathway for heat is more certain we believe that it is in consumers' interests, where it makes financial sense, to maintain existing assets and keep future energy options open.
- We need a business plan that provides the network capability and commercial framework that meets the needs of stakeholders and consumers. Consumer and stakeholder needs are unlikely to cause us to expand the network in the RIIO-2 period – the exception would be specific customer needs such as a new connection. However, we will need to maintain the health of ageing assets.
- We are the joint transmission owner and system operator. By maintaining the most efficient network or changing the commercial framework/tools we can create additional value for stakeholders and consumers.

"We must ensure we have the right gas transmission system and commercial framework to meet the needs of both stakeholders and consumers."

What our stakeholders tell us
This is an important topic for our existing stakeholders. We've done lots of work already, listening and learning via several well-established channels. These include:

- Future Energy Scenarios. National Grid has engaged 650 stakeholders to develop a credible range of energy scenarios out to 2050. The findings are already being used in our planning.
- Future of Gas project. Stakeholders tell us that gas will play a critical role for many decades to come. They also see an opportunity for a greener future by using hydrogen and biogases along with natural gas.
- Gas Future Operability Planning. This helps us to tackle operability challenges caused by variable supply and demand patterns. Stakeholders can challenge our assumptions about future uncertainties. Our customers share with us what they want from the GT Network. We also work together to understand the operational risks posed to the wider energy system.

Most stakeholders support a continued role for gas. They see the need for an efficient network that delivers the right capabilities for the future and allows the right access to an attractive GB gas market. We have also undertaken specific engagement activities to understand the impact of any disruption to their ability to take gas on and off the network as and when required. This will help to determine which elements of the services are most important and why. We will also be able to explore opportunities to do things differently. We will engage further on these topics during 2019.

[1] See Chapter 2 for further information on the views on the long-term role for gas transmission.

"Most stakeholders support a continued role for gas. They see the need for an efficient network that delivers the right capabilities for the future and allows the right access to an attractive GB gas market."

Impacts on stakeholders' businesses of any disruption to the ability to take gas on and off the network as and when required.

At stakeholder events in 2018[2] we asked stakeholders about the problems they would face if they couldn't take gas on and off the network as needed. We spoke to many different stakeholders. They included gas producers, gas shippers, gas storage operators and large industrial consumers. Points raised included:

- Impact on the ability to carry out day-to-day business.
- Impact on their commercial or financial position.
- Knock-on issues in areas such as reputation, long-term business viability and jobs.
- Several parties raised the impact on safety, particularly if there was little notice of any disruption to the ability to take gas on and off the network.

Here is some of the specific feedback you gave us:

"50% of our business comes from oil and gas so the impact physically and commercially are both really important as 50% of the business will be affected."

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

"~£10m to replace furnace if gas supplies interrupted and can't shut down in a controlled way over several days."

"To power stations there will be a high operational and financial impact and could potentially break the plant."

We also asked attendees about the level of tolerance they might have to any disruption to their ability to take gas on or off the networks. Clearly, there is no single answer. Different stakeholders tell us that, under current market conditions, their businesses have different levels of tolerance to disruption. Entry customers may be able to manage unplanned disruptions for a few hours due to the flexibility in upstream plant and assets. For many exit customers and the downstream gas consumers, the impacts of any disruption are immediate.

Overall 71% of responses at the events referred to a number of hours' disruption being tolerable. A further 17% spoke of 'a number of days' as the critical time period.

"If unplanned, then six hours would be the maximum level of disruption we would be able to manage. This is because we'd be unable to meet our end of day nominations of upstream shippers."

"If unplanned, we will not be able to meet trader's demands. Six hours per day is the maximum level of disruption we can cope with."

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

"Different stakeholders tell us that, under current market conditions, their businesses have different levels of tolerance to disruption."

[2] During July 2018, we held four regional events in St Fergus, London, Chester and Bacton which were attended by over 50 stakeholders from a wide range of organisations to discuss their requirements for the future needs of the GT Network.

Maintaining the network (asset health) to meet the future requirements of stakeholders

Maintaining the health of our assets is critical in avoiding disruption. An ageing asset base requires increasing work to maintain and improve the levels of service that customers have seen in RIIO-1.

To optimise where we invest in asset health, we use several goal-setting targets.

- The level of reliability risk (which gives a probability of failure of an asset).
- Environmental risk.
- Safety risk.
- Disruption to the transport sector[3].

At the events in July, we showed stakeholders a range of options. This set out how we could vary the goal-setting targets to produce comparisons of costs for the chosen outcomes. From these events, the preferred options were to keep the overall level of risk the same or to improve asset reliability/risk by 10%. We have continued to engage stakeholders on this topic in follow-up meetings.

"At the events in July, we presented stakeholders with a range of options of how we could vary the goal-setting targets to produce comparisons of costs for the chosen outcomes."

Improving network resilience

We have listened to stakeholders' views on whether we should try to increase the resilience of the network proactively. For example, should we do this in response to climate change and the increased risk of flooding at our sites?

There were mixed views. Of the 18 responses, roughly a third support a proactive response while a third say we should be reactive. The remaining responses believe decisions should be taken on a case-by-case basis.

You told us:

"National Grid should manage impacts by using the best climate metrics that are available. They should then do a cost benefit analysis using this along with good information to make decisions. They should understand the core risk of environmental changes."

"As a customer, you want to be confident that National Grid is doing the right thing, this would be best delivered with a proactive approach."

"The decision to manage impacts should be based on risk analysis."

Adding more value from the GT Network

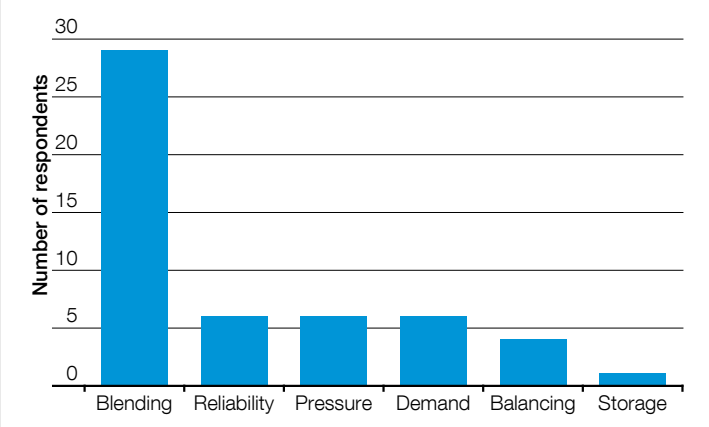
Stakeholders tell us we can do more to add more value to their business. Over half of the 52 responses received at the July 2018 events indicated gas blending or gas quality-related services as the highest importance. More than 30% of the remaining responses mentioned reliability, demand side response or pressure-related services.

We have started work on gas quality blending as a result of the feedback. This is being assessed for the RIIO-1 period as well as RIIO-2.

[3] For example, where a pipeline crosses a motorway there is a risk that an issue with the pipeline results in the closure of the motorway causing transport disruption.

[4] Options presented included reducing availability and reliability risk by 10%, keeping T2 costs the same as T1, 10% reduction in safety risk, 10% increase in environmental risk.

Figure 6.1: Potential services that stakeholders would value



Our activities and current performance

During RIIO-1, the gas system operator and gas transmission owner work together to maintain our assets and deliver a reliable and available network, giving stakeholders the unconstrained access[5] they need. This includes periods of cold weather such as 1 March 2018 'Beast from the East' (figure 6.2) and the local flooding in 2013 (figure 6.3 & 6.4).

Figure 6.2: Snow cover at a compressor site on 1 March 2018

Figure 6.3: Flooding at the Goxhill above ground installation in 2013

Figure 6.4: Flooding at the Gravesend Thames South above ground installation in 2013

[5] In 2017/18 we effectively facilitated the delivery of 99.9% of gas requirements for customers.

We are improving the efficiency of our asset health work. For example, we are collecting more detailed asset condition data. We're also enhancing decision support tools and using a campaign approach to delivery.

We refine our maintenance programme constantly. This is in response to significant step changes in supply and demand patterns[6], and examples of unplanned asset availability. This ensures that stakeholders can use the network as and when needed.

We are using new network configurations to avoid constraints. We have also signed commercial contracts to proactively reduce costs should any constraints happen.

Unconstrained access benefits consumers in several ways:

- Even under extreme weather conditions, gas is available to heat homes, for business and industrial users, and to generate electricity.
- Lower bills by supporting an efficient GB wholesale gas market with unrestricted access to diverse range of gas supplies.
- Supporting decarbonisation of the electricity market. This is achieved by flexible operation of gas-fired generation to enable greater use of less flexible low carbon generation.

"During RIIO-1 we have worked hard to maintain our assets… including during periods of cold weather such as 1 March 2018 'Beast from the East' and the local flooding in 2013."

Our direction of travel

We will continue to focus on four areas: the future capability of the network, asset health investment, potential resilience projects and our compressor investments to meet emissions legislation[7]. This will ensure our plan creates a network that meets the needs of future customers.

Here we explain a little more about our plans.

Network capability

We need to engage more with stakeholders to define network capability and to understand the level of capability required in the future. We intend to engage on this topic in 2019. We will then be able to build a business plan that delivers the capability required by stakeholders.

The south east of England faces some specific challenges which we want to address in our RIIO-2 plans. In this region there is an issue with the number of compressors that are non-compliant with tightening emissions legislation. There is also the need for significant asset health investment at the critically important Bacton gas terminal.

These two factors mean there is the opportunity to undertake a holistic approach to developing plans for this part of the network. Exploring the network options for the South East will form a key part of our 2019 stakeholder engagement.

Maintaining the network (asset health)

We have engaged with stakeholders and listened to their feedback. This has led us to focus on developing two asset health costed options. These alternative scenarios would deliver different outcomes for consumers on cost, safety, environment, reliability and transport risk:

- Maintaining the current level of asset health (measured through network risk).
- A 10% improvement to network availability, i.e. Reducing the risk of a service interruption.

[6] Including the announcement of the closure of the Rough storage facility.
[7] See Chapter 9 for information on compressor investments to meet emissions legislation.

In addition, we are working on defining the absolute level of risk that we should be aiming to achieve on our network. This is a key requirement of our regulator Ofgem as part of the RIIO-2 framework that was published in December 2018. Our current view is that the absolute level of risk on our network should improve over RIIO-2. We believe the level of risk reduction that is achieved by a 10% improvement to network availability aligns well with our views on the absolute level that should be on our network.

We will be explaining this in more detail through our engagement activities with stakeholders and with Ofgem to ensure we deliver the right level of risk that our stakeholders expect from our network assets.

Following the output of the work on network capability, our work on defining the absolute level of network risk and further refinement of unit costs, we will re-engage with stakeholders to confirm their preferred asset health programme

"We have engaged with stakeholders and listened to their feedback. This has led us to focus on developing two asset health costed options."

Regional network resilience

We will engage with stakeholders and consumers to understand their attitude to more regional risks. We will also explore their views on whether we should be making proactive resilience investments to manage credible, high- impact low-probability events, eg protection of assets from local landslide risk. The alternative is a reactive, and potentially more expensive and disruptive approach should any of these risks materialise.

Investments can be split into two areas:

- Network resilience: Where economically justified, investing in specific regional parts of the network where large numbers of customers rely on a single pipeline route placing them at a higher risk of disruption.
- Environmental resilience investments: Investing in the network to increase resilience to climate-related events such as the flooding risk to operational sites.

"We will… explore views on whether we should be making proactive resilience investments."

What it could cost

Delivering unconstrained network access involves teams from both the transmission owner and system operator across a range of time horizons, from planning timescales through to the on the day operation of the physical network, and associated commercial systems.

This chapter contains significant elements of the operational and capital costs of both the system operator and transmission owner parts of our business. They include provision of the Gas National Control Centre, IT systems, telemetry, utility bill costs for operational sites, tools, and vehicles for operational field force.

The largest cost element is the asset health programme which makes up around 50% of the costs. Our network is ageing and to maintain similar asset health risk levels in RIIO-2 we expect to undertake more asset interventions.

What it could cost

T1 annual spend £212m

Low £250m	T2 annual spend range	High £350m

Key drivers for the changing trend and range:

- Asset health costs are expected to increase from RIIO-1 to RIIO-2 due to ageing assets and the need for more interventions to maintain service levels.
- The low range represents maintaining asset health, ensuring compliance with relevant legislation, and delivery of a strategic asset replacement approach for the Bacton site.
- The high range includes higher asset health costs to increase asset reliability by 10%.

Initial planning assumptions

Our starting assumptions for this chapter include:

Supply and demand: We assume supply and demand are in line with the *Future Energy Scenarios* (*FES*) 2018.

GT Network – access and capability: Our starting point is based on the existing network. We expect this assumption to change as we engage stakeholders on defining the network capabilities they need for RIIO-2.

Legislation: We assume no change to legislation.

Brexit: We assume no material impacts from Brexit.

Network access: In some cases, our planned activities, such as asset health work, rely on being able to take parts of the network out of service (known as getting 'network access'). This depends on the prevailing supply and demand patterns and the levels of service needed by customers for example, guaranteed pressures. We assume that the current level of network access continues.

Maintenance days: Where there are existing arrangements that provide for maintenance days, we assume this will continue into RIIO-2.

We welcome your views:

Chapter:
Taking gas on and off the system

Question:

10. An increased work programme to maintain the health of, and deliver the right capability from, the transmission network may be beneficial to keeping overall gas costs down for consumers. What are your views on this statement?

Submit your feedback online here:

How to use this document
We want your feedback

Who is this consultation aimed at?

We are interested in the views of all stakeholders who are impacted by what we do and shaping the future of gas transmission. This includes the views of gas consumers, government and regulatory bodies, energy industry professionals and members of the public.

Tell us what you think

This consultation is open until 31 March 2019. You may give us feedback in the ways outlined below. We particularly seek your views in response to the specific questions we have posed. These are summarised on page 12. You may respond to all questions or just those relevant to your specific views.

Ways to feed back:

Make notes

Throughout the document, we have provided space for you to read and make notes at the start of each chapter (opposite). You can then type up your notes and send them in an email or submit them online.

Interactive pdf notes

Alternatively, we will be sending out editable pdf versions of this document with note fields for you to type directly into.

Email

We have a dedicated email address specifically for your feedback to this document. We welcome your thoughts at:
jennifer.pemberton@nationalgrid.com

Alternatively, you can put your thoughts in writing and send to: Jennifer Pemberton, National Grid House, Warwick Technology Park, Gallows Hill, Warwick. CV34 6DA.

Online

You can go directly to the website and submit your comments here.

Please share your thoughts:

Type here>