



# Annex

## A3.01 Price Control Deliverables

### December 2019

As a part of the NGGT Business Plan Submission

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## Executive summary

Price control deliverables (PCDs) are defined by Ofgem as a mechanism “to capture those outputs that are directly funded through the price control and where the funding provided is not transferrable to a different output or project. The purpose of a PCD will be to ensure the conditions attached to the funding are clear up-front.”<sup>1</sup>

In Ofgem’s business planning guidance<sup>2</sup>, we are required to set out these outputs and how we propose to deliver them. All of these outputs are explained within the relevant chapter of the business plan. The purpose of this annex is to provide more information around these 12 price control deliverable outputs, some of which were proposed by Ofgem in their sector-specific decision and others that are bespoke. Each PCD is set out against the following criteria:

- Why is this PCD important?
- What have stakeholders told us?
- What will the PCD deliver?
- Proposals for setting outputs and monitoring delivery
- Proposed consequences for non-delivery
- Risk and uncertainty

**Table A3.01.1 overview of proposed price control deliverables**

PCD name	Proposal summary	Related UM	Supporting info
1. <b>Cyber resilience plan (OT)</b>	<p>Implement a prioritised programme of replacement and security hardening of our operational technology for our compressor, terminal and AGI sites.</p> <p>We propose ex-ante funding for well defined-work (instead of UIOLI treatment).</p> <p>Propose 6 monthly monitoring of delivery and Cyber Assessment Framework (CAF) score with NIS Competent Authority</p>	UM1	<p>Chapter 15.</p> <p>National Grid UK Cyber Security Strategy (annex A15.01)</p> <p>Gas Transmission NIS Self-Assessment and Improvement Plan (annexes A15.03 and A15.05)</p> <p>NGGT Cyber Resilience Plan (Operational Technology) (annex A15.07)</p>
2. <b>Business IT security plan</b>	<p>Deliver suite of cyber security enhancement initiatives mapped to CAF categories.</p> <p>Propose 6 monthly monitoring of delivery and CAF score with NIS Competent Authority.</p>	UM1	<p>Chapter 15.</p> <p>National Grid UK Cyber Security Strategy (annex A15.01)</p> <p>NGGT Business IT Security Plan (annex A15.02)</p>
3. <b>Physical security</b>	<p>Deliver new PSUP solutions [REDACTED]. Deliver specified asset replacement [REDACTED]. Maintain PSUP solutions in line with BEIS guidance and CPNI guidance.</p>	UM2	<p>Chapter 15.</p> <p>Enhanced Physical Site Security Asset Health Engineering Justification Paper (annex A15.08)</p> <p>Enhanced Physical Site Security Major Project</p>

<sup>1</sup> 4.23 in Ofgem’s sector specific methodology decision

[https://www.ofgem.gov.uk/system/files/docs/2019/05/rriio-2\\_sector\\_specific\\_methodology\\_decision\\_core\\_30.5.19.pdf](https://www.ofgem.gov.uk/system/files/docs/2019/05/rriio-2_sector_specific_methodology_decision_core_30.5.19.pdf)

<sup>2</sup> [https://www.ofgem.gov.uk/system/files/docs/2019/06/rriio-2\\_business\\_plans\\_guidance\\_june\\_2019\\_published.pdf](https://www.ofgem.gov.uk/system/files/docs/2019/06/rriio-2_business_plans_guidance_june_2019_published.pdf)

PCD name	Proposal summary	Related UM	Supporting info
			Engineering Justification Paper (annex A15.09)  Enhanced Physical Site Security Maintenance (annex A15.10)
4. NARMS (PCD/ODI)	Relative target to measure delivery of our asset health investments with justified over and under delivery	-	Chapter 14.  Justification paper and CBA (annexes 14A14.08 – A14A14.23)
5. Asset health – non-lead assets	PCD to cover asset health spend that is not covered by NARMS (non-lead assets) in the following areas: re-lifing of compressor cabs and site fences, refurbishment of pipe supports, pits, site roads and site lighting systems.	-	Chapter 14.  Justification paper and CBA (annexes 14A14.08 – 14A14.23)
6. Compressor emissions (Wormington)	To meet customer network capability needs, we will ensure compressor emissions compliance at Wormington through delivery of 2 new units capable of supporting current flow requirements of 80 mscm/d that are broadly equivalent rated power to existing compressor unit capability.	-	Chapter 16  Compressor Emissions Compliance Strategy (annex A16.05)  Wormington Justification paper and CBA (annexes A16.10 and A16.11)
7. Compressor emissions (King's Lynn)	To meet customer network capability needs, we propose to deliver two new MCP compliant compressor units at King's Lynn.  PCD to reach Front End Engineering Design (FEED) in RIIO-2.  New PCD to be set at the point of FEED to deliver compressor emissions compliance at King's Lynn compressor station (to be completed in RIIO-3). 2 units anticipated at this stage; post FEED costs not in baseline & triggered by UM.	UM5	Chapter 16  Compressor Emissions Compliance Strategy (annex A16.05)  Chapter 16  King's Lynn Justification paper and CBA (annexes A16.414 & A16.515)
8. Compressor emissions (Peterborough)	To meet customer network capability needs, we propose to deliver one new MCP compliant compressor unit at Peterborough.  PCD to reach FEED in RIIO-2.  New Price Control Deliverable to be set at the point of FEED to deliver compressor emissions compliance at Peterborough compressor station (to be completed in RIIO-3). 1 unit anticipated at this stage; post FEED costs not in baseline & triggered by UM.	UM6	Chapter 16.  Compressor Emissions Compliance Strategy (annex A16.05)  Peterborough and Huntingdon Justification paper and CBA (annexes A16.12 and A16.13)
9. St Fergus terminal	To meet customer network capability needs, we propose to deliver three new emissions compliant units at St Fergus.  We will reach FEED in RIIO-2.  New Price Control Deliverable to be defined at the point of FEED to ensure sufficient compliant capability to deliver at St Fergus compressor station (to be completed in RIIO-3). 3 units anticipated at this stage; post FEED costs not in baseline & triggered by UM.	UM7	Chapter 16  Compressor Emissions Compliance Strategy (annex A16.05)  St. Fergus Justification paper and CBA (annexes A16.16 and A16.17)

PCD name	Proposal summary	Related UM	Supporting info
<b>10. Redundant assets</b>	Addressing redundant assets across 80 sites, assets and asset groups as set out in justification paper during RIIO-2.	-	Chapter 16  Justification paper (annex A16.08)
<b>11. Kings Lynn subsidence</b>	Address subsidence at King's Lynn AGI site.  We will build a new bi-directional area within the boundary of the existing King's Lynn site. This will remove any reliance on existing pipework, which is under stress due to ground subsidence.  PCD to deliver FEED in RIIO-2. Baseline funding requested to achieve FEED.  We are also requesting baseline funding to address subsidence at the site in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified	2UM12	Chapter 14  Justification paper and CBA (annexes A14A14.04 and A14A14.05)
<b>12. Bacton terminal site redevelopment</b>	We will redevelop the Bacton terminal to meet the future customer need and allow for potential future changes (e.g. connection of storage or compression if required and the facilitation of decarbonisation).  PCD to deliver FEED in RIIO-2. Baseline funding requested to achieve FEED.  We are also requesting baseline funding to redevelop Bacton terminal in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified. Once the redeveloped terminal is operational, the existing terminal will be decommissioned.	UM11	Chapter 14  Justification paper and CBA (annexes A14A14.02 and A14A14.03)

### Updates for the December draft

For our October business plan draft separated our PCDs around compressor emissions compliance into separate deliverables. This allows delivery for each project to be measured on an individual basis. For the December plan we have further developed our thinking and specificity around our individual PCDs whilst also including detail on the proposed deliverables at St Fergus and for reliability on non-lead assets.

For each PCD which is not being developed in detail at a cross-sector level we have included high-level proposals around consequences of non-delivery and explicit link to stakeholder feedback.

Following our business plan submission, we will continue to work with Ofgem and our cross-industry colleagues on the development of cross-sector mechanisms and further defining these outputs through licence drafting.

## PCD overview

### What are PCDs and how do they work?

Ofgem has established a framework for RIIO-2 with three ways in which companies are held to account for delivering outputs. There are three types of outputs set out within the Ofgem's RIIO\_2 sector specific methodology decision; Licence Obligations, Output Delivery Incentives (ODIs) and Price Control Deliverables. This Annex sets out our proposed package of PCDs; ODIs are addressed in Annex A3.03.

PCDs are defined by Ofgem as a mechanism

*to capture those outputs that are directly funded through the price control and where the funding provided is not transferrable to a different output or project. The purpose of a PCD will be to ensure the conditions attached to the funding are clear up-front.*

*PCDs could include for example:*

- *Large one-off capital projects – to be delivered to a stated specification, budget or timing*
- *Commitments or assumptions associated with a baseline level of funding – eg MW of connected generation, or kilometres of pipe replacement*
- *Other input activities to be delivered to a stated standard – eg activities related to changes in government policy. These will be determined by us on a case-by-case basis.<sup>3</sup>*

### PCD coverage for gas transmission

Given Ofgem's definition, we have proposed PCDs to cover the largest areas of our capital expenditure.

As they cover gas transmission specific deliverables, we are classing all of our outputs as "bespoke" with the exception of NARMS, the methodology for which is being set cross-sector. As well as in this annex our outputs are summarised in the snapshot table (Annex A3.04).

In many cases, our proposed PCDs are linked to uncertainty mechanisms, a summary of which can be found in Annex A3.02. Once these uncertainty mechanisms are triggered, any related PCDs could be reconsidered as part of a reopener process.

For information on our specific uncertainty mechanism proposals please see Annex A3.02.

A summary of our proposed PCDs is over the page. Each PCD is set out against the following criteria:

- Why is this PCD important?
- What have stakeholders told us?
- What will the PCD deliver?
- Proposals for setting outputs and monitoring delivery
- Proposed consequences for non-delivery
- Risk and uncertainty

An overview of the Ofgem business planning guidance relating to this area and where relevant source information can be found is in Appendix 1 to this annex.

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<sup>3</sup> 4.23 in Ofgem's sector specific methodology decision

[https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2\\_sector\\_specific\\_methodology\\_decision\\_-\\_core\\_30.5.19.pdf](https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_core_30.5.19.pdf)

## PCD descriptions

### 1. Cyber resilience plan – operational technology (OT)

<b>PCD value (across RIIO-2)</b>	<b>£417.4m baseline</b> <b>£38.1m non-baseline funded UM</b> (see UM1)
<b>BP chapter</b>	Chapter 15
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priority</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	Implement a prioritised programme of replacement or security hardening of our operational technology for our compressor, terminal and AGI sites.  We propose ex-ante funding for well defined-work (instead of UIOLI treatment).  Propose 6 monthly monitoring of delivery and Cyber Assessment Framework (CAF) score with NIS Competent Authority

#### Why is this PCD important?

Customers and consumers benefit from the improved safety and resilience of the transmission system to ride through and recover from malicious attacks, which threaten to disrupt continuity of GB energy supplies.

This PCD tracks our delivery of the security enhancements required to meet new regulations in the national interest to reduce the risk of actual events that could have a severe impact on GB consumers.

The needs case for this PCD is set out in the supporting information (annexes A15.01, A15.03, A15.05, A15.07). These documents highlight

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs

#### What have stakeholders told us?

Stakeholders have told us that we should seek to protect the system from increasing cyber threats in line with government and HSE requirements and that we should use a risk-based approach to enhance cyber resilience. This PCD will measure delivery of the outputs developed in light of this stakeholder feedback.

#### What will the PCD deliver?

Whilst the need for cyber resilience PCDs are set out across sector this proposal is gas transmission specific. This PCD proposal covers outputs as set out in the Cyber Resilience Plan (Operational Technology) to be agreed with the NIS Competent Authority (a joint role between Ofgem and BEIS).

This is likely to include delivery of:

- compliance with the requirements of the NIS Regulations using a risk-based assessment for security levels, leading to a system that is protected against cyber-attack to an agreed and appropriate degree
- a network whereby higher risk compressor stations, terminals and AGIs are controlled by a limited range of industrial control systems (ICS) fully supported by the relevant original equipment manufacturers (OEMs) and with disaster recovery and business continuity systems in place.
- a defence in depth architecture with appropriate segmentation of the various control system layers in line with the requirements of cyber security standard IEC62443.

- facilities for secure export of data from the ICS (e.g. to emissions or performance monitoring systems) and for secure, controlled third-party access by 'untrusted' sources (both remotely and via the local engineering work station).

We will deliver this by:

- ensuring appropriate measures to secure ICS against cyber-attack and to detect any potential intrusions and implementing an element of protection and segmentation of the network for less critical installations as appropriate. Some of these installations will continue to use legacy ICS pending replacement.
- ensuring all relevant and applicable measures are in place and being used to support the system in achieving compliance with the requirements of the NIS Regulations 2018 (e.g. database of assets, regular assessments of cyber capability, control of removable media etc.).

The detail of this PCD will be agreed confidentially. However, in terms of specific numbers of investments tied to the funding, the following are proposed to be delivered by the end of RIIO-2.

- Replace ■ station control systems across ■ sites
- Deploy ■ instances of SCADA resilience enhancement (a RIIO-1 innovation) as a faster & lower cost cyber resilience mitigation in tandem with the prioritised asset replacements

Our plan is extensively built up from a unit cost times volume approach. The unit cost is dependent upon the target site specific Security Level (SL). We propose that the PCD records an agreed library of unit costs for alternative SLs and the indicative SLs. To the extent the required SL is subsequently assessed to be different to the indicative SL, then the unit cost library can be used to re-calculate the appropriate allowance for the PCD.

Unit Cost (£m) 2018/19 prices	Security Level 1	Security Level 2	Security Level 3
Replace Station Control System	■	■	■

Further details of the proposed volumes of work by secondary asset class are set out in Annex A15.07 and in Business Plan Data Table 3.06(a).



## **Proposals for setting outputs and monitoring delivery**

We propose that the outputs will be based upon our Cyber Resilience Plan Annex 15.07 and will be agreed between ourselves and Ofgem with input from the NIS Competent Authority. We propose that the RIIO-2 base revenue allowance for delivery of the stated outputs is determined by Ofgem as part of the RIIO-2 price control review. The confidential part of our business plan submission provides cost justification for the proposed RIIO-2 scope. We propose that the delivery of the outputs, their prioritisation, and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves, BEIS and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice e.g.:

- (a) our periodic reporting to the NIS Competent Authority.
- (b) our annual regulatory reporting pack covering financial performance and activity commentary.

For the purposes of reporting on progress, it is proposed to report on the volumes of interventions by asset type commissioned (as described in the Business Plan Data Table), the site specific Security Level (SL) assessments compared to the indicative SL assignment, reforecasting of the CAF maturity for the end of RIIO T2 and T3 based on progress; and changes to the external threat landscape which have impacted, or are forecast to impact the OT cyber resilience plan. For the first two years, progress on the baseline deliverables which lead to Uncertainty Mechanism triggers (associated with the ITOT programme) shall also be included. The proposal is for 6 monthly reporting.

## **Proposed consequences for non-delivery**

As PCDs for cyber security are being proposed across sector, we expect that Ofgem will want to set consequences for non-delivery consistently. However, as with other PCDs we would propose if we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity.

## **Risk and uncertainty**

Instead of Use It or Lose It treatment described in the Ofgem Sector Specific Methodology Decision, we propose ex-ante funding plus Totex Incentive Mechanism for the baseline element of our NGGT Cyber Resilience Plan. This is because our scope is well defined, with clear, ring-fenced, outputs that can be recorded in confidential Price Control Deliverables, and where a strong performance incentive on NGGT will drive benefits for consumers. The uncertain costs we have given are for indication only. We would use the RIIO-2 reopener windows to bring forward final proposals for the relevant scope and costs as and when those details are firmed up. We propose that our Cyber Resilience Plan is subject to two reopener windows, one at the beginning of RIIO-2 and one at mid-period.

Aspects of our RIIO-2 cyber resilience work programme are part of a rolling programme that will extend into RIIO-3. We propose that periodic monitoring is used to inform a seamless RIIO-2 close-out and T3 roll-forward process with the objective that the price review periods should not present artificial barriers to delivery.

During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to reopen the price control allowance. Where outputs stay the same but vary in number we propose the PCD could trigger an automatic adjustment mechanism, i.e. without needing to invoke a formal re-opener submission and decision process. Similarly, if the required SL is different to the indicative SL the PCD could automatically adjust allowances by reference to the unit cost library.

An uncertainty mechanism is proposed to deal with more significant uncertainty in this area and further detail can be found in our UM annex A3.02.

The types of uncertainty that may arise include:

- change in government requirements / prioritisation
- network-based changes including changes to flow patterns, site decommissioning, changing customer connections

- change in criticality of sites
- changes in response to actual security events.

## 2. Business IT Security plan

<b>PCD value (across RIIO-2)</b>	<b>£43.3m baseline</b> <b>£12.2m non-baseline funded UM (UM1)</b>
<b>BP chapter</b>	Chapter 15
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priority</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	Deliver suite of cyber security enhancement initiatives mapped to CAF categories.  Propose 6 monthly monitoring of delivery and CAF score with NIS Competent Authority.

### Why is this PCD important?

Customers and consumers benefit from the improved safety and resilience of the transmission system to ride through and recover from malicious attacks, which threaten to disrupt continuity of GB energy supplies.

This PCD tracks our delivery of the security enhancements required to meet new regulations in the national interest to reduce the risk of actual events that could have a severe impact on GB consumers.

The needs case for this PCD is set out in the supporting information (annexes A15.01-0202). These documents highlight

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs

### What have stakeholders told us?

Stakeholders have told us that we should seek to protect the system from increasing cyber threats in line with government and HSE requirements and that we should use a risk-based approach to enhance cyber resilience. This PCD will measure delivery of the outputs developed in light of this stakeholder feedback.

### What will the PCD deliver?

This PCD proposal covers outputs as set out in the Business IT Security Plan to be agreed with the NIS Competent Authority (a joint role between Ofgem and BEIS).

We anticipate this will cover a suite of initiatives to improve cyber resilience across our enterprise IT environment and implement new capabilities in line with NIS guidelines. In addition, we propose to deliver 5 cyber resilience projects specific to the CNI services operated by the gas system operator.

### Proposals for setting outputs and monitoring delivery

We propose that the RIIO-2 base revenue allowance for delivery of the stated outputs is determined by Ofgem as part of the RIIO-2 price control review. The confidential part of our business plan submission provides justification for the proposed RIIO-2 scope. We propose that the delivery of the outputs, their prioritisation, and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves, BEIS and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice e.g.:

- (a) our periodic reporting to the NIS Competent Authority.
- (b) our annual regulatory reporting pack covering financial performance and activity commentary.

### Proposed consequences for non-delivery

As PCDs for cyber security are being proposed across sector, we expect that Ofgem will want to set consequences for non-delivery consistently. However, as with other PCDs we would propose if we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity.

### Risk and uncertainty

In line with the regulatory treatment described in Ofgem’s SSMD, we propose ex-ante funding plus Totex Incentive Mechanism for the baseline element of our NGGT Business IT Security Plan. The uncertain costs we have given are for indication only. We would use the RIIO-2 reopener windows to bring forward final proposals for the relevant scope and costs as and when those details are firmed up. We propose that our Business IT Security Plan is subject to two reopener windows, one at the beginning of RIIO-2 and one at mid-period.

Aspects of our RIIO-2 cyber resilience work programme are part of a rolling programme that will extend into RIIO-3. We propose that periodic monitoring is used to inform a seamless RIIO-2 close-out and T3 roll-forward process with the objective that the price review periods should not present artificial barriers to delivery.

During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to reopen the price control allowance. Where outputs stay the same but vary in number we believe an automatic adjustment mechanism may be appropriate rather than a reopener.

An uncertainty mechanism is proposed to deal with more significant uncertainty in this area and further detail can be found in our UM annex A3.02.

The types of uncertainty that may arise include:

- change in government requirements / prioritisation
- network-based changes including changes to flow patterns, site decommissioning, changing customer connections
- change in criticality of sites
- changes in response to actual security events.

## 3. Physical security

<b>PCD value (across RIIO-2)</b>	<b>£131.9m</b> Related UM (UM2), non-baseline funded and not projected.
<b>BP chapter</b>	Chapter 15
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priority</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	Delivery of physical security enhancements to reduce the risk of events that could have a severe impact on GB consumers. Deliver new PSUP solutions [REDACTED]. Deliver specified asset replacement [REDACTED]. Maintain security in line with CPNI guidance.

### Why is this PCD important?

Customers and consumers benefit from the improved safety and resilience of the transmission system to ride through and recover from malicious attacks, which threaten to disrupt continuity of GB energy supplies and the safety of the public and employees.

This PCD tracks our delivery of the enhanced physical site security required by the government in the national interest to reduce the risk of actual events that could have a severe impact on GB consumers and communities.

The needs case for this PCD is set out in the relevant supporting documentation (A15.08-A15.10). These documents highlight

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs

### **What have stakeholders told us?**

Stakeholders have told us that we should deliver physical security upgrades at sites required by BEIS. This PCD will allow the monitoring of the delivery of those physical security upgrades.

### **What will the PCD deliver?**

Our proposed delivery in the RIIO-2 period is as follows:

- Deliver new PSUP solutions [REDACTED].
- Deliver strategic planned asset replacement as follows:
  - Civils replacement of significant perimeter security sections [REDACTED]  
[REDACTED] We will be replacing deteriorated, legacy, civil assets dating from 1987 which were not changed at original rollout of the government Physical Security Upgrade Programme in 2008.
  - commencement of a nationwide programme (including at [REDACTED]) of prioritised replacement of IT Hardware at [REDACTED] sites at which PSUP solutions are already installed.
  - replacement of Technical assets at [REDACTED] sites which were among the first to have PSUP solutions deployed. This is a sustainable, enduring asset management replacement strategy which will continue through RIIO-2 and beyond, indefinitely while the enhanced security requirement remains.
- Maintain PSUP solutions in line with BEIS guidance and CPNI high level security principles.

### **Proposals for setting outputs and monitoring delivery**

The confidential identity of the sites will be defined in writing by BEIS following discussion with us.

The RIIO-2 base revenue allowance for delivery of the stated outputs is determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between NG, BEIS and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice e.g.:

- (a) quarterly reporting to BEIS on delivery status of new build PSUP solutions
- (b) independent audit reporting to BEIS to certify that the delivered solutions meet specification and quality requirements.
- (c) quarterly reporting to BEIS on compliance status of commissioned PSUP solutions
- (d) annual regulatory reporting pack covering financial performance and activity commentary.

### **Proposed consequences for non-delivery**

As PCDs for physical security are being proposed across sector, we expect that Ofgem will want to set consequences for non-delivery consistently. However, as with other PCDs we would propose if we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity.

Reporting intervals should leverage and dovetail with existing custom and practice eg:

- (a) NG quarterly reporting to BEIS on delivery status of new build PSUP solutions.
- (b) Tech 1 Audit – audit report provided to NG and BEIS following receipt of the contractors design. Audit undertaken by a third party independent to NG.
- (b) Tech 2 independent audit reports to BEIS to certify that delivered solutions meet specification and quality requirements.
- (c) NG quarterly reporting to BEIS on compliance status of commissioned PSUP solutions
- (d) NG annual regulatory reporting pack covering financial performance and activity commentary

### **Risk and uncertainty**

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this should not reopen the price control allowance. Where outputs stay the same but vary in number we believe an automatic adjuster mechanism may be appropriate rather than a reopener.

Aspects of our RIIO-2 PSUP work programme are part of a rolling programme that will extend into RIIO-3. (e.g. replacement of assets due to age and obsolescence). The periodic monitoring should be used to inform a seamless RIIO-2 close-out and T3 roll-forward process with the objective that the price review periods should not present artificial barriers to delivery.

We propose that an uncertainty mechanism is used deal with uncertainty for physical security and detail can be found in our UM annex A3.02.

The types of uncertainties that apply to this PCD area include:

- a) change in government requirements
- b) network-based changes including changes to flow patterns, site decommissioning, changing customer connections
- c) change in criticality of sites
- d) changes in response to actual security events.

#### 4. Asset resilience /network asset risk metrics (NARMsNARMs)

<b>PCD value (across RIIO-2)</b>	<b>Agreed proportion of asset health spend (asset health spend £466m)</b>
<b>BP chapter</b>	Chapter 14
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priority</b>	I want to use energy as and when I want
<b>Summary</b>	Relative target to measure delivery of our asset health investments.

##### Why is this PCD important?

All network assets carry some risk of failure. Typically, this starts out low at the beginning of the asset lifespan, but it increases as assets age. Risk can be reduced through either asset replacement or remedial asset health work. Failures can also occur due the actions of third parties or environmental impacts.

Our asset health proposals are vital to maintain the necessary safety and reliability of our network and demonstrate compliance with legislation. To maintain a safe and resilient network, network companies are required to make informed decisions about asset health works to ensure that the level of risk is maintained at an appropriate level.

This PCD is important to ensure that there is funding to meet a target level of risk on the network over the RIIO-2 period. NARMs is used across the sector to ensure that network companies are making an appropriate trade-off between short and long-term costs and benefits and that maximum value is delivered to consumers.

The needs case relating to specific asset health investments covered by this PCD are set out in the relevant Asset health justification papers in annexes A14.08-23.

##### What have stakeholders told us?

Stakeholders representing almost all sectors have been very clear that network reliability, and therefore asset health, is a critical area. Reliability and resilience are absolute fundamentals for consumers, and they expect gas and heat to be there whenever, wherever and however they need it, now and in the future. The NARMs PCD is the asset health output to ensure that asset health work meets stakeholder requirements for a reliable gas transmission network.

##### What will the PCD deliver?

The detail of the Network Asset Risk Metric (NARM) is set out in Ofgem's sector decision methodology, and is due to be developed further across industry. The NARM will be used to justify the funding for, and to set the output of asset management work.

In summary, NARMs allows us to assign a common value across all the risk areas on the network. Translating supply, safety or environmental risks into a financial cost standardises how we quantify different issues and we can then compare their significance through an approach called monetised risk. Based on the principles of monetised risk we can forecast cost, risk and service performance of the assets in the long term. This enables more transparent reporting and more holistic decision-making, leading to more efficient spend.

##### Proposals for setting outputs and monitoring delivery

The NARM will be further developed on a cross-sector basis.

For gas transmission we expect the following categories to be classed as NARMsNARMs/non-NARMs. The non-NARMs assets outputs are proposed to be covered by PCD5\_Asset Health – non lead assets.

**Table A3.01.02 NARMs and non-NARMs classification**

	<b>NARMs</b>	<b>Non-NARMs</b>
<b>Valves</b>	All Valve investments are considered as NARMs PCDs and are included in the A1 category for potential risk-trading.	-
<b>Pipelines</b>	Pipeline Coating, & Cathodic Protection and Pig Trap Sub Theme investments are considered as NARMs PCDs and are included in the A1 category for potential risk-trading	Investment on non-lead assets essential to protect the primary asset (the NTS pipeline) from damage <ul style="list-style-type: none"> <li>• Impact Sleeves</li> <li>• Watercourse Crossings</li> <li>• Depth of Cover</li> </ul>
<b>Structural integrity</b>	Fuel Tanks & Bunds which is considered as a ring-fenced NARMs investment (category A3)	All other investment in all Structural Integrity assets. These assets have only an indirect impact upon the ability to safely and reliably transport gas; the decision to invest is therefore based on the ability of these assets to protect, or support, the primary gas-containing asset.
<b>Plant &amp; equipment</b>	The majority Plant & Equipment Theme investments are considered as NARMs PCDs and are included in the A1 category for potential risk-trading. The exception is Cladding which is considered as a ring-fenced NARMs investment (category A3).	-
<b>Electrical</b>	The Electrical Theme investments are considered as NARMs PCDs and are included in the A3 ring-fenced category, which excludes them from risk-trading.	-
<b>Cab infrastructure</b>	The Cab Infrastructure Theme investments are considered as NARMs PCDs and are included in the A3 ring-fenced category, which excludes them from risk-trading	-

For Valves inclusion within NARMs we are proposing this element also has an automatic adjustment element. We are proposing a unit cost adjustment for Valves, with options for adjusting the cost of valves for the following scenarios, which may be dictated by cyber resilience (OT requirements)

- Remote operability (requiring costs associated with actuators).
- Manual operability

### **Proposed consequences for non-delivery**

The NARM will be further developed on a cross-sector basis.

### **Risk and uncertainty**

Ofgem has recognised in its sector decision document that, due to the current maturity of modelling of long-term risk and uncertainty around longer term asset risk forecasts, there are some issues calculating consumer value in longer term investments.

In terms of the mechanism design set out in the Ofgem sector decision document, we support the concept that justified over and under delivery are both acceptable. This is particularly important in the case of asset health shocks, potential type faults and obsolescence, where it is important to have a mechanism to adjust revenues. This protects NGGT from hard to manage, unforecastable risk. Some of these risks can have large financial and serious network consequences.

## 5. Asset health – non-lead assets

<b>PCD value (across RIIO-2)</b>	£87m
<b>BP chapter</b>	Chapter 14
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	PCD to cover asset health spend that is not covered by NARMS (non-lead assets) in the following areas: re-lifing of compressor cabs and site fences, refurbishment of pipe supports, pits, site roads and site lighting systems.

### Why is this PCD important?

As set out in the description of PCD 4 NARMS above, our asset health proposals are vital to maintain the necessary safety and reliability of our network and demonstrate compliance with legislation. NARMS covers 75% of the proposed asset health spend. The remaining 25% covers other necessary works on site such as civils and electrical works. This PCD covers a proportion of the remaining spend.

80% of spend on non-lead asset health (£105m out of £132m) can be split across six categories; re-lifing of compressor cabs and site fences and refurbishment of pipe supports, pits, site roads and site lighting systems. The remainder is split across numerous categories that are difficult to group. The PCD measures delivery across these 6 categories.

### What have stakeholders told us?

Stakeholders have told us that they value being able to flow gas without restriction. To enable this our sites need to be managed responsibly which means ensuring that we undertake a rolling programme of asset health across all our assets.

### What will the PCD deliver?

Our asset health programme is a rolling programme and consequently, some work will be started in RIIO-2 that won't be delivered until RIIO-3. We are proposing that the PCD measures outputs in these groups that are being fully delivered within RIIO-2. This accounts for £87m of works.

For this £87m we are proposing the delivery of the following outputs. This is set out in chapter 14 in our business plan alongside planned expenditure for each measure.

**Table A3.01.03 Asset health – non lead assets proposed measures**

<b>T2 Proposed Measure</b>
26 Compressor Cabs Re-lifed
76 Site Fences Re-lifed
922 Pipe Supports Refurbished
245 Pits Refurbished
75 Site Roads Refurbished
12 Site lighting systems refurbished

Across these 6 areas around £19m will be spent in RIIO-2 for delivery in RIIO-3 as part of our rolling programme of investment. We are proposing that these RIIO-3 deliverables are measured as part of the RIIO-3 price control deliverable arrangements.



## Proposals for setting outputs and monitoring delivery

The outputs are proposed above. Monitoring of any changes and descriptions of why any changes are made will be reported through the annual regulatory reporting pack process.

## Proposed consequences for non-delivery

If we do not deliver the agreed solutions we will return any allowances plus the WACC associated with the activity

## Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

## 6. Compressor emissions compliance - Wormington

<b>PCD value (across RIIO-2)</b>	████████
<b>BP chapter</b>	Chapter 16
<b>Ofgem priority area</b>	Deliver a sustainable network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	To meet customer network capability needs, we will ensure compressor emissions compliance at Wormington through delivery of 2 new units capable of supporting current flow requirements of 80 mscm/d that are broadly equivalent rated power to existing compressor unit capability.

## Why is this PCD important?

Compressors are vital to moving gas around the system so consumers can use gas as and when they want. However, it is also important to consumers that this is enabled by a sustainable energy system. Consumers benefit from improvements to air quality through our compressor emissions compliance programme, ensuring the most polluting compressors are decommissioned and replaced (where necessary) with cleaner machinery.

For Wormington, we propose installing two new units at a broadly equivalent rated power to the current non-compliant gas compressors. This comes out as the most cost-effective option in the CBA. Without these additional units there would be a risk that stakeholder network capability needs could not be met to ensure sufficient entry and exit capacities or 1 in 20 obligations could not be met if the electric drive unit at Wormington is unavailable.

This PCD tracks delivery of our RIIO-2 plans to continue to meet network capability requirements (see chapter 12) and to address compliance with tightening emissions legislation. Full information on why this is important can be found in our Compressor Emissions Compliance Strategy (CECS) in annex A16.05. The needs case for this PCD is set out in the relevant justification paper and CBA (annexes A16.10-A16.11).

This justification paper sets out in detail.

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

## What have stakeholders told us?

Stakeholders value levels of network capability which allow for unconstrained system access. Stakeholders also value our work on reducing emissions to improve air quality and believe we should get on with it as soon as possible. Domestic consumers also consider air quality to be important. Our regulators have also asked us to set out how we comply with our emissions legislation through the

development of the CECS (annex A16.05); this PCD delivers one of the commitments set out in the CECS to deliver compliance.

### What will the PCD deliver?

Deliver compressor emissions compliance at Wormington in RIIO-2 through delivery of two new units capable of supporting current flow requirements of 80 mscm/d that are broadly equivalent rated power to existing compressor unit capability.

### Proposals for setting outputs and monitoring delivery

Base funding is requested for all spend incurred during RIIO-2.

The key milestone dates for this are shown below:

**Table A3.01.04 Wormington compressor project indicative timeline**

New Build			
Cycle	Network Development Stage Gates		Indicative Dates
			Wormington
Pre-FEED Stage 4.0 and 4.1	T0	Generation of Need Case	April 2019
	T1	Accept Need Case	April 2019
	F1	Initial Sanction	April 2019
	T2	Define Strategic Approach and Outputs Required to Deliver GT Handover to Delivery Unit	June 2021
FEED Stage 4.2	F2	FEED Sanction and Feasibility Sanction Includes BAT assessment and Compressor Machinery Train selection	June 2021
	T3	Agreement to Proceed to Conceptual Design	June 2022
	F3	Conceptual Design Sanction and Sanction of long lead items	June 2022
Tender Award Stage 4.3	T4	Scope Freeze	September 2023
Project Execution Stage 4.4	F4	Detailed Design AND Build Sanction (T4-F4-T5)	September 2023
	T5	DDS Challenge, Review and Sign off Maintenance Requirements Identified	June 2025
Acceptance Stage 4.5	T6	Post Commissioning Handover to GT; Operational and Maintenance Complete or Planned (Operational Acceptance)	June 2026
	F5	Project Closure	March 2027

Delivery for RIIO-2 will be associated with the project being in the phase T5 of the project as set out above. Final delivery will be measured at the point of operational acceptance due in 2026.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem. Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary

### Proposed consequences for non-delivery

If we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity.

## Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

We do not expect the requirements for these investments to change during the price control and therefore do not propose a related uncertainty mechanism to deal with uncertainty for this investment at Wormington.

## 7. Compressor emissions compliance – King’s Lynn

<b>PCD value (across RIIO-2)</b>	<b>FEED – PCD</b> <b>UM 5 – New PCD</b>
<b>BP chapter</b>	Chapter 16
<b>Ofgem priority area</b>	Deliver a sustainable network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	To meet customer network capability needs, we propose to deliver two new MCP compliant compressor units at King’s Lynn. We will reach FEED in RIIO-2.  New Price Control Deliverable to be defined at the point of FEED to deliver compressor emissions compliance at King’s Lynn compressor station (to be completed in RIIO-3). Two units anticipated at this stage; post FEED costs not in baseline & triggered by UM .

### Why is this PCD important?

Compressors are vital to moving gas around the system so consumers can use gas as and when they want. However, it is also important to consumers that this is enabled by a sustainable energy system. Consumers benefit from improvements to air quality through our compressor emissions compliance programme, ensuring the most polluting compressors are decommissioned and replaced (where necessary) with cleaner machinery.

This PCD tracks delivery of our RIIO-2 plans to ensure customer needs around network capability (see chapter 12) is met whilst remaining compliant with tightening emissions legislation. Full information on why this is important can be found in our Compressor Emissions Compliance Strategy (CECS) in annex A16.05. The needs case for this PCD is set out in the relevant justification paper and CBA (annexes A16.18-A16.19). These justification papers set out in detail.

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

For King’s Lynn we are proposing installing two new units on this site, starting in RIIO-2 and finishing in RIIO-3. In two of the four FES scenarios, investment is critical. Timing of any such investment is also constrained by available outage windows on this critical site. We need to make sure that we can deliver the right solution on site so we can continue to meet customer needs if these scenarios occur.

### What have stakeholders told us?

Stakeholders value levels of network capability which allow for unconstrained system access. Stakeholders also value our work on reducing emissions to improve air quality and believe we should get on with it as soon as possible. Domestic consumers also consider air quality to be important. Our regulators have also asked us to set out how we comply with our emissions legislation through the development of the CECS (annex A16.05); this PCD delivers one of the commitments set out in the CECS to deliver compliance.

### What will the PCD deliver?

Deliver FEED proposals in relation to delivery of compressor emissions compliance at King's Lynn in RIIO-3. An outline timeline of the early stages of the project included the related uncertainty mechanism set out in full in annex A3.02 is in table A3.01.05 below.

**Table A3.01.05 King's Lynn FEED & reopener indicative timelines**

Timeline				
FEED feasibility	Ofgem touchpoint	Tender process & BAT	Reopener	Decision required
January to June 2022	July 2022	August 2022 to January 2023	February to May 2023	June 2023

Base funding requests for this project have been included for FEED feasibility (high level design and optioneering) only in our RIIO-2 business plan, and this is what the PCD measures.

Proceeding to FEED allows significant flexibility if at a later stage, it becomes clear the currently identified investment proposal is not required necessitating conversion to another option such as one unit. Costs post-FEED have not been included in our baseline request. These costs will be subject to an associated uncertainty mechanism reopener to cover costs past FEED as set out in annex A3.02.

### Proposals for setting outputs and monitoring delivery

Assuming that the solutions are in line with current proposals, the key milestone dates for the overall project are shown below:

**Table A3.01.06 King's Lynn compressor project indicative timelines**

New Build			
Cycle	Network Development Stage Gates		Indicative Dates
			King's Lynn
Pre-FEED Stage 4.0 and 4.1	T0	Generation of Need Case	April 2019
	T1	Accept Need Case	April 2019
	F1	Initial Sanction	April 2019
	T2	Define Strategic Approach & Outputs Required to Deliver GT Handover to Delivery Unit	June 2022
FEED Stage 4.2	F2	FEED Sanction and Feasibility Sanction Includes BAT assessment and Compressor Machinery Train selection Reopener process	June 2022
	T3	Agreement to Proceed to Conceptual Design	June 2023
	F3	Conceptual Design Sanction and Sanction of long lead items	June 2023
Tender Award Stage 4.3	T4	Scope Freeze	September 2024
Project Execution Stage 4.4	F4	Detailed Design AND Build Sanction (T4-F4-T5)	September 2024
	T5	DDS Challenge, Review & Sign off Maintenance Requirements Identified	June 2025
Acceptance Stage	T6	Post Commissioning Handover to GT; Operational & Maintenance Complete or Planned (Operational Acceptance)	June 2027

New Build			
Cycle	Network Development Stage Gates		Indicative Dates
			King's Lynn
F5	Project Closure		March 2028

Delivery of the first PCD will be measured by the conclusion of FEED feasibility (high level design and optioneering).

Delivery for the second PCD will be defined at the point of the reopener.

Delivery for RIIO-2 will be reported on through our regulatory reporting pack.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem. Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary.

### Proposed consequences for non-delivery

If we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity

### Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

Please see annex A3.2 for further information on the associated uncertainty mechanism described above.

## 8. Compressor emissions compliance – Peterborough

<b>PCD value (across RIIO-2)</b>	<b>FEED - PCD UM 6 – New PCD</b>
<b>BP chapter</b>	Chapter 16
<b>Ofgem priority area</b>	Deliver a sustainable network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	To meet customer network capability needs, we propose to deliver one new MCP compliant compressor unit at Peterborough. We will reach FEED to in RIIO-2.  New Price Control Deliverable to be defined at the point of FEED to deliver compressor emissions compliance at Peterborough compressor station (to be completed in RIIO-3). One unit anticipated at this stage; post FEED costs not in baseline & triggered by UM.

### Why is this PCD important?

Compressors are vital to moving gas around the system so consumers can use gas as and when they want. However, it is also important to consumers that this is enabled by a sustainable energy system. Consumers benefit from improvements to air quality through our compressor emissions compliance programme, ensuring the most polluting compressors are decommissioned and replaced (where necessary) with cleaner machinery.

This PCD tracks delivery of our RIIO-2 plans to continue to meet network capability requirements (see chapter 12) and to address compliance with tightening emissions legislation. Full information on why this is important can be found in our Compressor Emissions Compliance Strategy (CECS) in annex A16.05. The needs case for this PCD is set out in the relevant justification paper and CBA (annexes A16.12-A16.13). These justification papers set out in detail.

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

Peterborough compressor station is at the centre of the NTS. It is considered to be the most important compressor station on the NTS by the teams who operate the network. As well as its primary purpose of ensuring sufficient gas is moved into the south of the network to provide our customers with the flow rates and levels of pressure that they require; it is also key in maximising entry capability at a number of the larger supply points across the country and ensuring the effective north to south transfer of gas. We are proposing to build one new unit starting in RIIO-2 and finishing in RIIO-3 to provide resilience to the new units currently being built at the site. If there is insufficient resilience available, we believe that consumer needs to use gas where and when they want could be at risk.

### What have stakeholders told us?

Stakeholders value levels of network capability which allow for unconstrained system access. Stakeholders also value our work on reducing emissions to improve air quality and believe we should get on with it as soon as possible. Domestic consumers also consider air quality to be important. Our regulators have also asked us to set out how we comply with our emissions legislation through the development of the CECS (Annex A16.05); this PCD delivers one of the commitments set out in the CECS to deliver compliance.

### What will the PCD deliver?

Deliver FEED proposals in relation to delivery of compressor emissions compliance at King’s Lynn in RIIO-3. An outline timeline of the early stages of the project included the related uncertainty mechanism set out in full in annex A3.02 is below.

**Table A3.01.07 Peterborough FEED & reopener indicative timelines**

Timeline				
FEED feasibility	Ofgem touchpoint	Tender process & BAT	Reopener	Decision required
January to June 2024	July 2024	August 2024 – January 2025	February - May 2025	June 2025

Base funding requests for this project have been included for FEED feasibility (high level design and optioneering) only in our RIIO-2 business plan, and this is what the PCD measures.

Proceeding to FEED allows significant flexibility if at a later stage, it becomes clear the currently identified investment proposal is not required necessitating conversion to another option such as one unit. Costs post-FEED have not been included in our baseline request. These costs will be subject to an associated uncertainty mechanism reopener to cover costs past FEED as set out in annex A3.02.

### Proposals for setting outputs and monitoring delivery

Assuming that the solutions are in line with current proposals, the key milestone dates for the overall project are shown below:

**Table A3.01.08 Peterborough & Huntingdon compressor project indicative timelines**

Cycle	Network Development Stage Gates		Indicative Dates	
			Peterborough New Build	Huntingdon A and B Decommission
Pre-FEED Stage 4.0 and 4.1	T0	Generation of Need Case	April 2019	April 2019
	T1	Accept Need Case	April 2019	April 2019
	F1	Initial Sanction	April 2019	April 2019
	T2	Define Strategic Approach & Outputs Required to Deliver GT Handover to Delivery Unit	June 2024	June 2022
FEED Stage 4.2	F2	FEED Sanction and Feasibility Sanction Includes BAT assessment and Compressor Machinery Train selection Reopener process	June 2024	June 2022
	T3	Agreement to Proceed to Conceptual Design	June 2025	N/A
	F3	Conceptual Design Sanction and Sanction of long lead items	June 2025	N/A
Tender Award Stage 4.3	T4	Scope Freeze	September 2026	December 2023
Project Execution Stage 4.4	F4	Detailed Design AND Build Sanction (T4-F4-T5)	September 2026	December 2023
	T5	DDS Challenge, Review & Sign off Maintenance Requirements Identified	June 2027	TBC
Acceptance Stage 4.5	T6	Post Commissioning Handover to GT; Operational & Maintenance Complete or Planned	June 2029	March 2024
	F5	Project Closure	March 2030	December 2024

Delivery of the first PCD will be measured by the conclusion of FEED feasibility (high level design and optioneering).

Delivery for the second PCD will be defined at the point of the reopener.

Delivery for RIIO-2 will be reported on through our regulatory reporting pack.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and

Ofgem. Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary.

### Proposed consequences for non-delivery

If we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity

### Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

Please see annex A3.2 for further information on the associated uncertainty mechanism described above.

## 9. Compressor emissions compliance – St Fergus

<b>PCD value (across RIIO-2)</b>	<b>FEED - PCD</b> <b>UM 7 – New PCD</b>
<b>BP chapter</b>	Chapter 16
<b>Ofgem priority area</b>	Deliver a sustainable network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	To meet customer network capability needs, we propose to deliver three new emissions compliant units at St Fergus. We will reach FEED in RIIO-2.  New Price Control Deliverable to be defined at the point of FEED to ensure sufficient compliant capability to deliver at St Fergus compressor station (to be completed in RIIO-3). 3 units anticipated at this stage; post FEED costs not in baseline & triggered by UM.

### Why is this PCD important?

Compressors at St Fergus are vital for delivery entry capacity to help meet the needs of GB consumers to use gas as and when they want. However, it is also important to consumers that this is enabled by a sustainable energy system. Consumers benefit from improvements to air quality through our compressor emissions compliance programme, ensuring the most polluting compressors are decommissioned and replaced (where necessary) with cleaner machinery.

This PCD tracks delivery of our RIIO-2 plans to continue to meet network capability requirements (see chapter 12) and to address compliance with tightening emissions legislation. Full information on why this is important can be found in our Compressor Emissions Compliance Strategy (CECS) in annex A16.05. The needs case for this PCD is set out in the relevant justification paper and CBA (annexes A16.12-A16.13). These justification papers set out in detail.

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

St Fergus is one of the most strategically important sites for the NTS. The St Fergus terminal handles between 25% and 50% of the UK's gas supplies, dependent on supply and demand patterns. There are nine units across three current compressor plants at St Fergus. The bulk of the compression is provided by 2 electric variable speed drive (VSD) compressor units which were commissioned in 2015. The remaining 7 are gas powered compressors from the original site (commissioned in 1978) on Plants 1 and 2 and are not compliant with emissions legislation. These compressors currently provide: the low flow capability, back up to the VSDs bulk flow and high capability when used with the VSD compressors. Compression continues to be required to maintain



network capability and the service to the customer; therefore a solution to address the environmental non-compliance on these gas units is required. At this stage we are proposing to deliver 3 new units on a redeveloped Plant 2 at the site.

### What have stakeholders told us?

Stakeholders value levels of network capability which allow for unconstrained system access. Stakeholders also value our work on reducing emissions to improve air quality and believe we should get on with it as soon as possible. Domestic consumers also consider air quality to be important. Our regulators have also asked us to set out how we comply with our emissions legislation through the development of the CECS (Annex A16.05); this PCD delivers one of the commitments set out in the CECS to deliver compliance.

### What will the PCD deliver?

Deliver FEED proposals in relation to delivery of compressor emissions compliance at King's Lynn in RIIO-3. An outline timeline of the early stages of the project included the related uncertainty mechanism set out in full in annex A3.02 is below.

**Table A3.01.09 St Fergus FEED & reopener indicative timelines**

Timeline				
FEED feasibility	Ofgem touchpoint	Tender process & BAT	Reopener	Decision required
April 2021-April 2022	May 2022	June to October 2022	November 2022 - February 2023	March 2023

Base funding requests for this project have been included for FEED feasibility (high level design and optioneering) only in our RIIO-2 business plan, and this is what the PCD measures.

Proceeding to FEED allows significant flexibility if at a later stage, it becomes clear the currently identified investment proposal is not required necessitating conversion to another option such as one unit. Costs post-FEED have not been included in our baseline request. These costs will be subject to an associated uncertainty mechanism reopener to cover costs past FEED as set out in annex A3.02.

### Proposals for setting outputs and monitoring delivery

Assuming that the solutions are in line with current proposals, the key milestone dates for the overall project are shown below. The project is at an earlier stage than our other RIIO-2 compressor proposals due to changes in regulatory circumstances relating to St Fergus, and there is more uncertainty around scope and timelines.

**Table A3.01.10 St Fergus redevelopment indicative timelines**

Financial Year	2022		2023		2024		2025		2026		2027		2028	
Calendar Year	Apr-21	Oct-21	Apr-22	Oct-22	Apr-23	Oct-23	Apr-24	Oct-24	Apr-25	Oct-25	Apr-26	Oct-26	Apr-27	Oct-27
RIIO-2														
RIIO-3														
FEED														
UM Submission/Decision														
Detailed Design														
Procurement														
Construction														
Commissioning														

Delivery of the first PCD will be measured by the conclusion of FEED feasibility (high level design and optioneering).

Delivery for the second PCD will be defined at the point of the reopener.

Delivery for RIIO-2 will be reported on through our regulatory reporting pack.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem. Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary.

### **Proposed consequences for non-delivery**

If we do not deliver the agreed solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity.

### **Risk and uncertainty**

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

Please see annex A3.02 for further information on the associated uncertainty mechanism described above.

## **10. Redundant assets**

<b>PCD value (across RIIO-2)</b>	<b>£82.6m</b>
<b>BP chapter</b>	Chapter 16
<b>Ofgem priority area</b>	Deliver a sustainable network
<b>Consumer priorities</b>	I want you to facilitate delivery of a sustainable energy system I want an affordable energy bill
<b>Summary</b>	We propose to address 80 redundant sites, assets and asset groups in RIIO-2.

### **Why is this PCD important?**

Customers and consumers benefit from responsible demolition activities. These can have a positive impact on nature and communities through reconstructing the environment and releasing materials back into the value chain to reduce the need to mine raw materials. This relates to the consumer priority 'I want you to facilitate delivery of a sustainable energy system'.

This PCD tracks how we address our redundant asset base in RIIO-2, ensuring that local communities benefit from the removal of industrial assets/sites in close proximity to their location, and how we mitigate the potential hazard to the environment (e.g. through contamination). It is also socially fairer to address these assets now. Customers who have had the benefits of these assets will pay for decommissioning rather than leaving a burden on a potentially smaller group of future consumers to deal with. This relates to the consumer priority 'I want an affordable energy bill'.

Stakeholders have also told us that it is important to address this issue now. Further information on stakeholder views on this PCD can be found in our demolition engagement log in annex A16.07.

The needs case for this PCD is set out in the relevant justification paper in annex A16.08.

### **What have stakeholders told us?**

Stakeholders have told us they think we should prioritise assets on a risk-based approach, prioritising assets that have the largest impact on stakeholders. This PCD sets out a mechanism to achieve this.

### **What will the PCD deliver?**

We propose to address redundant assets across 80 specific sites, assets and asset groups set out in Annex A16.08:

**operational sites** - we will remove redundant above-ground assets, but leave below-ground assets in place

**fully non-operational sites** – we will remove above and below-ground assets

**pipelines** –we will purge and fill with nitrogen.

### **Proposals for setting outputs and monitoring delivery**

The 80 sites are listed in our justification paper on redundant assets in annex A16.08.

The RIIO-2 base revenue allowance for addressing these will be determined by Ofgem as part of the RIIO-2 price control review.

We will prioritise sites with the greatest potential for environmental and safety impacts. The delivery of the specified outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice, through the NG annual regulatory reporting pack covering financial performance and activity commentary.

### **Risk and uncertainty**

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

There is no specific uncertainty mechanism proposed to deal with changes in the redundant asset base. The main uncertainty lies in whether new sites are identified relating to unforeseen customer disconnections.

This means additional sites may become redundant in RIIO-2. However, we propose if any such new sites are identified they are made safe and consideration for how to address them should be made as part of the RIIO-3 price control arrangements.

## 11. King's Lynn subsidence

<b>PCD value (across RIIO-2)</b>	<b>£1.0m FEED</b> <b>£30.2m baseline funding subject to UM (UM12)</b> <b>PCD covers delivery of whole project</b>
<b>BP chapter</b>	Chapter 14
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	Address subsidence at King's Lynn AGI site.  We will build a new bi-directional area within the boundary of the existing King's Lynn site. This will remove any reliance on existing pipework, which is under stress due to ground subsidence.  PCD to deliver FEED in RIIO-2. Baseline funding requested to achieve FEED.  We are also requesting baseline funding to address subsidence at the site in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified.

### Why is this PCD important?

King's Lynn AGI site requires significant intervention due to subsidence which has resulted in unacceptable stress levels on assets.

This PCD tracks delivery of our RIIO-2 plans to redevelop King's Lynn AGI site in line with these challenges. The needs case for this PCD is set out in the relevant justification paper in annex A14.04. This justification paper sets out in detail:

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

### What have stakeholders told us?

Whilst we have not specifically engaged with stakeholders on our proposals for King's Lynn, they have told us that they see a long-term need for capability at the Bacton site with imports and exports through Bacton are supported by the King's Lynn site. Stakeholders have also said that we should meet all our safety obligations. This PCD will ensure that this capability at Bacton can be supported by King's Lynn.

### What will the PCD deliver?

PCD to deliver FEED in RIIO-2 in relation to build a new bi-directional area within the boundary of the existing King's Lynn site. This will remove any reliance on existing pipework, which is under stress due to ground subsidence.. Baseline funding requested to achieve FEED. The outline timelines for FEED and the proposed reopener set out in annex A3.02 are outlined below.

**Table A3.01.11 King's Lynn subsidence FEED & reopener indicative timelines**

<b>FEED</b>	<b>Reopener</b>	<b>Decision required</b>
<b>April 2021 to May 2022</b>	<b>June - August 2022</b>	<b>September 2022</b>

We are requesting baseline funding to address subsidence at the site in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified.

## Proposals for setting outputs and monitoring delivery

The high level proposed timeline for the overall project is shown below.

Table A3.01.12 King's Lynn subsidence project indicative timelines

Key Tasks	Start date	Completion date
Survey	June 2021	Sept 2021
Detailed design	Sept 2021	March 2022
Purchase long lead items	Sept 2021	March 2022
Prelims & Fabrication	March 2022	October 2022
Proposed outage	March 2023	Sept 2022
Construction	May 2023	Sept 2023
Completion	Sept 2023	December 2023
Closure of Project	December 2023	March 2024

Delivery of the first PCD will be measured by deliver of FEED which includes high level design and optioneering and tender for long-lead items up to the point of the reopener.

Delivery for the second PCD will be defined at the point of the reopener.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary.

## Proposed consequences for non-delivery

we do not deliver the agreed post-FEED solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity

## Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

However, there is a degree of cost uncertainty with the solution for King's Lynn subsidence. We are therefore proposing an uncertainty mechanism to enable adjustment to base revenues for this project following the Front End Engineering Design. (FEED) phase. More information can be found on this uncertainty mechanism in annex A3.02.

## 12. Bacton Terminal redevelopment

<b>PCD value (across RIIO-2)</b>	<b>£4.7m FEED</b> <b>£134.6 baseline funding subject to UM 11</b> <b>PCD covers delivery of whole project</b>
<b>BP chapter</b>	Chapter 14
<b>Ofgem priority area</b>	Maintain a safe and resilient network
<b>Consumer priorities</b>	I want to use energy as and when I want I want you to facilitate delivery of a sustainable energy system
<b>Summary</b>	We will redevelop the Bacton terminal to meet the future customer need and allow for potential future changes (e.g. connection of storage or compression if required and the facilitation of decarbonisation).  PCD to deliver FEED in RIIO-2. Baseline funding requested to achieve FEED.  We are also requesting baseline funding to redevelop Bacton terminal in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified. Once the redeveloped terminal is operational, the existing terminal will be decommissioned.

### Why is this PCD important?

Bacton terminal is a key asset on the network for both maintaining gas supplies and facilitating exports and there are significant asset health issues on site which require intervention during the RIIO-2 period. Redeveloping the terminal as opposed to implementing an extensive asset health programme is more cost-effective for consumers and less disruptive for customers.

This PCD tracks delivery of our RIIO-2 plans to redevelop Bacton Terminal. The needs case for this PCD is set out in the relevant justification paper in annex A14.02. This justification report sets out in detail:

- The needs case for the investment, looking at the needs of future network users
- The costs and activities to achieve delivery of these outputs.

### What have stakeholders told us?

Stakeholders have told us that they see a long-term need for the Bacton terminal. There is consensus that a re-developed terminal will deliver the most efficient solution to our asset health problems. This PCD will measure the delivery of this solution for stakeholders.

### What will the PCD deliver?

PCD to deliver FEED in RIIO-2 in relation to redeveloping the Bacton terminal to meet the future customer need and allow for potential future changes (e.g. connection of storage or compression if required and the facilitation of decarbonisation). The outline timelines for FEED and the proposed reopener set out in annex A3.02 are outlined below.

**Table A3.01.13 Bacton terminal FEED & reopener indicative timelines**

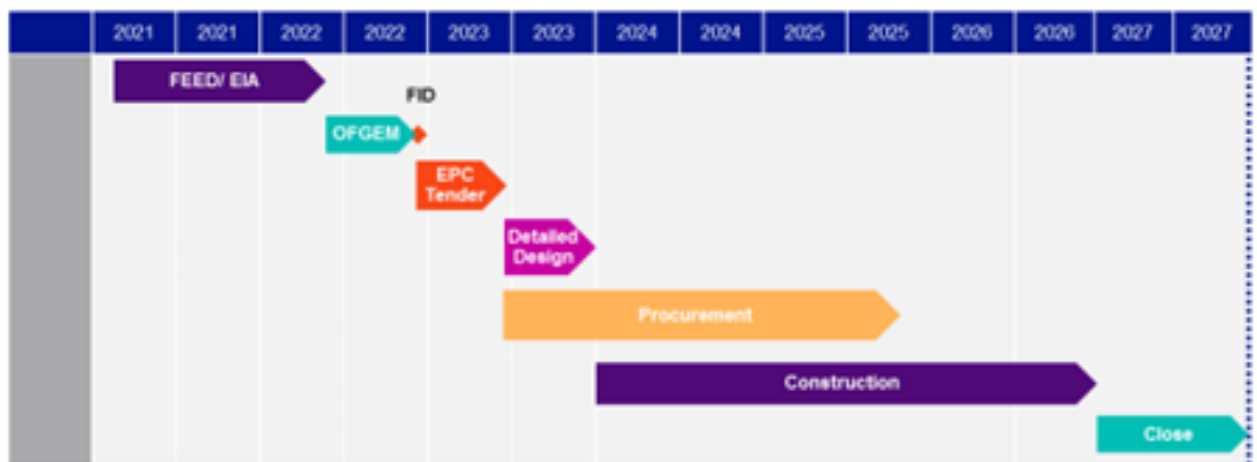
<b>FEED</b>	<b>Reopener</b>	<b>Decision required</b>
<b>April 2021 to May 2022</b>	<b>June - August 2022</b>	<b>September 2022</b>

We are requesting baseline funding to redevelop the Bacton site in our RIIO-2 plan. We are proposing to use a UM post-FEED to adjust these baseline costs and to define a new PCD for delivery for the solution identified.

## Proposals for setting outputs and monitoring delivery

The high level proposed timeline for the overall project is shown below.

**Table A3.01.14 Bacton terminal FEED & reopener indicative timelines**



Delivery of the first PCD will be measured by deliver of FEED which includes high level design and optioneering and tender for long-lead items up to the point of the reopener.

Delivery for the second PCD will be defined at the point of the reopener.

The RIIO-2 base revenue allowance for delivery of the stated outputs will be determined by Ofgem as part of the RIIO-2 price control review.

We propose that the delivery of the outputs, their prioritisation and any changes to the definition of the outputs is subject to regular periodic reporting and monitoring obligations between ourselves and Ofgem.

Reporting intervals should leverage and dovetail with existing custom and practice through our annual regulatory reporting pack covering financial performance and activity commentary.

### Proposed consequences for non-delivery

If we do not deliver the agreed post-FEED solution or have not made sufficient progress (bar mitigating circumstances) we will return any allowances plus the WACC associated with the activity

### Risk and uncertainty

We are incentivised through the Totex Incentive Mechanism to find efficiencies in how we achieve our outputs. During RIIO-2 if the required outputs stay the same and are delivered but we under/overspend this is not cause to re-open the price control allowance.

However, there is a degree of cost uncertainty with the solution for Bacton Redevelopment. We are therefore proposing an uncertainty mechanism to enable adjustment to base revenues for this project following the Front End Engineering Design. (FEED) phase. More information can be found on this uncertainty mechanism in Annex A3.02

## Appendix 1 – summary of business plan guidance

Business planning guidance reference	Source information
2.15 As set out in the SSMD, companies will have the opportunity to propose bespoke outputs in collaboration with their stakeholders and CEGs/UGs. This could include bespoke PCDs or ODIs.	-
2.16 Company proposals for bespoke outputs should.: reflect the network services that existing and future consumers/network users and/or wider stakeholders require	Set out in summary table and PCD description in high level in this annex. Further detail the value of specific investments can be found in relevant investment decision packs. References to these in all sections.
be as complete as possible in capturing the activities and costs of the company	Set out in this annex - “what will the PCD deliver” and summary table identifying costs in each section.
be measurable and reportable	Set out in this annex “proposals for setting outputs and monitoring delivery” in each section.
allow comparison of performance across companies, where there is sufficient commonality	Many of our PCDs are bespoke gas-transmission specific. Where comparability is possible this has been highlighted.
where relevant, capture the long-term nature of outputs	The long-term nature of our investments are captured within relevant investment decision packs (justification papers and cost-benefit analyses) relating to specific price control deliverables. Risk and uncertainty is covered both within the investment decision packs and through corresponding uncertainty mechanisms in Annex A3.02
set stretching targets which are well-evidenced and deliver clear outcomes/outputs	Set out in this annex - “what will the PCD deliver” in each section.
2.17 Deliver clear consumer value	
The Company should address the following to justify any proposals for bespoke outputs:	-
whether the activity in question is best dealt with through the price control, rather than through a government body responsible for the public interest in that area (eg Highways Authorities for matters relating to the occupation of the highway)	All proposed price control deliverables in this plan relate to our assets so this is therefore not applicable.
whether proposals are backed by robust evidence and justification (such as cost-benefit analyses) and demonstrate value for money for existing and future consumers	Evidence and justification for the proposals are found in relevant investment decision packs (justification papers and cost benefit analyses). These are linked from the summary table and within each PCD section.
the value that consumers will receive from a proposed new service level and, by extension, the potential associated reward and/or penalty, and the extent to which these are symmetrical, in terms of value and likelihood of outcome	Set out in this annex “why is this pcd important?”, “what stakeholders have told us?” and “what will the pcd deliver?” in each section.
the extent to which an independent measure of the existing level of service that consumers receive is available and the degree to which the target level being proposed represents an improvement on this	
the level of service provided by other companies/comparators (where available)	N/A
the activities (and indicative cost) associated with achieving the targeted level of service	Activities are set out in this annex under “proposals for setting outputs and monitoring delivery” and costs are set out in the summary table in each section.
proposals for licence conditions and/or penalties if performance falls below existing service levels	Proposals for non-delivery can be found in each section under “proposed consequences for non-delivery”