

# Overarching document King's Lynn – MCPD Re-opener

April 2025

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# 1 Executive Summary

- 1.1.1 National Gas Transmission (NGT) is committed to ensuring the continued safe, efficient, and reliable operation of the National Transmission System (NTS). King's Lynn compressor station is a critical strategic site and has formed an integral part of the NTS for over 50 years. It ensures gas can enter and exit the NTS, particularly supporting entry from the Bacton terminal (including the interconnector to Europe) and the Isle of Grain Liquefied Natural Gas (LNG) storage facility.
- 1.1.2 The location of King's Lynn and Bacton on the network is illustrated in Figure 1



*Figure 1: NTS with location of King's Lynn and Bacton highlighted*

- 1.1.3 During high exports to Europe via the Bacton Terminal, compression at King's Lynn plays an important role in moving gas towards the terminal. Due to the Russian Ukraine war, there has been volatility in global supply patterns which resulted in unprecedented volumes of gas being exported to Europe. This showcased the importance of King's Lynn.
- 1.1.4 King's Lynn has four compressor units, three (Units B, C and D) of which are operational. Medium Combustion Plant Directive (MCPD) legislation requires that existing gas turbines, between 1MW and 50MW net thermal input, must not exceed an emissions limit of 150mg/m<sup>3</sup> Nitrogen Oxides (NO<sub>x</sub>) from 1 January 2030.
- 1.1.5 Units C and D are Siemens (formerly Rolls-Royce) SGT-400s which are compliant with current emissions legislation. Units A and B are SGT-A20s (Avon) units which can breach the NO<sub>x</sub> limit set out by MCPD. Whilst Unit B, installed in 1971, is still in operational use, Unit A was disconnected in 2017 after becoming life expired

and beyond economical to continue investing in for current and future requirements.

- 1.1.6 Our Final Option Selection Report (FOSR) was submitted to Ofgem under Special Condition 3.11 King's Lynn Compressor Station Re-opener and Price Control Deliverable of NGT Gas Transporter Licence in January 2023. It set out our preferred option for compliance with the MCPD at the King's Lynn Compressor Station.
- 1.1.7 As part of the FOSR determination in accordance with Special Condition 3.11.9, Ofgem rejected the preferred FOSR option identified by NGT and instead approved one of the alternative shortlisted options. The FOSR considered eight options as listed below in Table 1 noting that in all options re-wheeling Units C and D to enable mapping to higher flows and decommissioning of Unit A is required. The removal of Unit A will improve operational safety and enable more space being available for future site requirements.

FOSR Options	Unit A	Unit B	Unit C	Unit D	Unit E	Unit F
1 – Counterfactual	Decom*	500Hr EUD	Compressor Re-wheel	Compressor Re-wheel	-	-
2 – CSRP	Decom*	CSRP Retrofit	Compressor Re-wheel	Compressor Re-wheel	-	-
3 – SCR	Decom*	1533 SCR Retrofit	Compressor Re-wheel	Compressor Re-wheel	-	-
4 – 1 x DLE	Decom*	1533 DLE Retrofit	Compressor Re-wheel	Compressor Re-wheel	-	-
5 – 1 x New Unit	Decom*	Decom	Compressor Re-wheel	Compressor Re-wheel	New Unit (Brownfield)	-
6 – 2 x New Unit	Decom*	Decom	Compressor Re-wheel	Compressor Re-wheel	New Unit (Brownfield)	New Unit (Brownfield)
7 – 1 x New Unit + EUD	Decom*	500Hr EUD	Compressor Re-wheel	Compressor Re-wheel	New Unit (Brownfield)	-
8 – 1 x Decom	Decom*	Decom	Compressor Re-wheel	Compressor Re-wheel	-	-

**\*Unit A was disconnected in 2017 and partially decommissioned**

Table 1: King's Lynn FOSR Options – Ofgem preferred option highlighted

- 1.1.8 The Final Preferred Option approved by Ofgem in November 2023 to comply with MCPD by 2030 is Option 1, the counterfactual 'do nothing' option, with the existing non-compliant SGT-A20 (Avon) Unit B to be retained under the 500-hour Emergency Use Derogation (EUD) allowed for in the Directive, with significant asset health investment to improve unit availability.
- 1.1.9 The Final Preferred Option also included the decommissioning of Unit A. Furthermore, to ensure operational mapping alignment across all site compressors, Ofgem stated in its direction to consider the case for a re-wheel of the existing SGT-400s Units C and D during this phase of the project review.
- 1.1.10 Following Ofgem's response to the FOSR, National Gas submitted a Needs Case which was accepted in June 2024 to support the requirement for compressor re-wheels of SGT-400s Units C and D, enabling NGT to apply for funding to deliver the works as part of the King's Lynn MCPD re-opener. Ofgem assessed the needs case and approved it in the same month.
- 1.1.11 As part of the King's Lynn FOSR process, NGT completed a thorough review process to determine the optimal combination of interventions required to maximise the station's reliability and availability whilst complying with the MCPD Directive. As such, the scope to re-wheel SGT-400s Units C and D, decommission Unit A and deliver a combination of Asset Health (AH) interventions on Unit B are covered under three individual Engineering Justification Papers (EJPs). Figure 2 outlines the components of this submission.



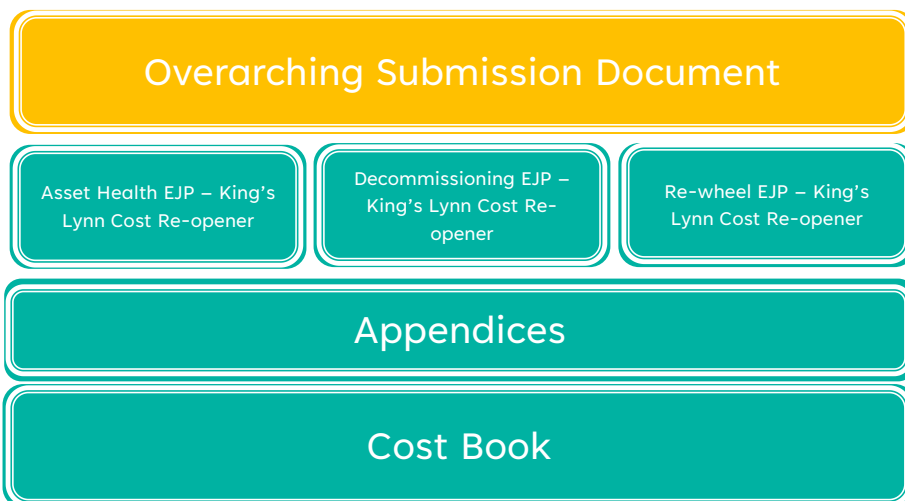


Figure 2: Re-opener Cost Submission Structure

1.1.12 [REDACTED]

[REDACTED]

[REDACTED]

1.1.15 Without this investment we are at increased risk from asset failures and consequential security of supply impacts. Any loss of compression has the potential to cause significant impact to customers, making it essential that our King’s Lynn fleet remains available and resilient.

#### Summary Table

1.1.16 NGT’s objectives for this re-opener is to request non-baseline (CEPOT) funding for the three projects set out in this application. These projects are submitted with defined scope, outputs and costed project plans, developed since the FOSR submission in January 2023 and the request covers:

- True-up of baseline FOSR allowances
- Non-baseline allowances for three projects, including Asset Health interventions on Unit B, Re-wheel of Unit C and D and Decommissioning of Unit A

1.1.17 NGT’s request for funding through this document is made against Special Condition 3.11 Compressor Emissions re-opener and Price Control Deliverable and is outlined in Table 2. This is aligned to the Regulatory Reporting Pack (RRP).

Name of Scheme / Programme	Special Condition 3.11 King's Lynn Compressor Emissions Re-opener and Price Control Deliverable		
Primary Investment Driver	Compliance with MCPD legislation		
Scheme Reference / Mechanism or Category	Special Condition 3.11: CEPt – Baseline allowance CEPREt – Re-opener Allowance		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		
[REDACTED]	[REDACTED]		

Table 2: King's Lynn MCPD Re-opener Summary Table

## 2 Licence Conditions and Outputs

### Application criteria

- 2.1.1 This submission has been prepared in accordance with the Gas Transporter Licence Special Condition 3.11 Part D and includes a level of detail in line with Ofgem's RIIO-2 re-opener Guidance and Application Requirements Document: Version 3 (the Guidance)<sup>1</sup>.
- 2.1.2 In accordance with section 2.2 of the Guidance this application is accompanied by an assurance statement (Appendix B) to comply with Ofgem's requirement for written confirmation from a suitable senior person within the company that the re-opener application has been appropriately assured.
- 2.1.3 Appendix C highlights NGT's mapping to Ofgem requirements.
- 2.1.4 Special Condition 3.11 of the NGT Licence relates to Compressor Emissions re-openers and enables NGT to request adjustment to the value against the following licence terms:
- Baseline allowance - CEPT
  - Re-opener allowance – CEPREt
- 2.1.5 The King's Lynn Compressor Station cost re-opener (CEPREt) provides the mechanism for the submission. In accordance with licence condition 3.11, Part D NGT's submission aims to modify the outputs, delivery dates and allowances detailed in Table 3.
- 2.1.6 In accordance with Licence condition 3.11 NGT's submission seeks to modify the values within the Gas Transmission RIIO-2 Price Control Financial Model (PCFM). In accordance with licence condition 3.11, Part E NGT's submission seeks to provide details of actuals and forecast (i.e. true up) of Baseline allowances received and update values in Appendix 1.
- 2.1.7 This follows Price Control Deliverable (PCD) Reporting Requirements and Methodology<sup>2</sup>, paragraph 7.4 where the delivery of a PCD output is a trigger for a re-opener submission or is the re-opener submission, the PCD assessment will be undertaken as part of the re-opener assessment. In addition, Ofgem's RIIO-2 Final Determination for NGT notes that Ofgem expects to true up baseline funding as part of the MCPD re-opener submissions. As part of pre submission engagement, we have raised the issue of how and when Ofgem intends to approach the true up and PCD assessment. The Ofgem and NGT leads continue to progress this matter as at the point of submission.
- 2.1.8 Each EJP specifies the output, allowance requested and rational. Table 5, in Section 5, summarises each associated funding request.

### Baseline Funding and Price Control Deliverable

- 2.1.9 Table 3 below shows a summary of the current PCD for King's Lynn aligned to Appendix 2 of the Licence.

Site	Output	Delivery Date	Re-opener application window	Total allowance (all years) (£m) 18/19 Price base
King's Lynn	Final Option Selection Report <sup>3</sup>	January 2023	April 2025	

Table 3: King's Lynn Baseline Funding and PCD

- 2.1.10 Table 4 below is a summary of the proposed new Price Control Deliverables (PCD) Outputs associated with the delivery of this re-opener submission for King's Lynn - Emissions compliant Compressor Unit B, Re-wheel of compressor Units C and D, and Decommissioning of Unit A.

<sup>1</sup> [Re-opener Guidance and Application Requirements Document: Version 3 | Ofgem](#)

<sup>2</sup> Version 4, published by Ofgem 25 August 2023

<sup>3</sup> As per Ofgem's RIIO-T2 Final Determinations published in December 2020, this PCD is to ensure NGT delivered a Final Options Selection Report, long lead items and the re-opener submission.

Output #	MCPD Option	Output Description	Delivery Date
█	█	█ █ █	█
█	█	█ █ █ █	█
█	█	█ █	█

Table 4: King's Lynn MCPD Proposed PCD Outputs

### Regulatory Statement

- 2.1.11 Our Asset Health EJP submission includes a funding request for electrical assets which are also included in our RIIO-GT3 business plan. Table 8 showcases the relevant crossover asset types and volumes. Given our scope and cost confidence for this re-opener, we suggest it would be appropriate these are funded via this RIIO-T2 re-opener submission.
- 2.1.12 If Ofgem agrees and awards allowances for these works, we propose that the corresponding asset volumes are reduced in the NGT RIIO-GT3 licence proposals or via a RIIO-GT3 licence modification (depending on when the re-opener decision is finalised).
- 2.1.13 █  
█
- 2.1.14 In line with section 2.4 and 2.5 of the Guidance, this document and supporting business case documents will be published in their entirety within five days of submission, with only necessary redactions where appropriate. Publication will include an explanation for any redactions.
- 2.1.15 All costs presented in this document are in a 2018/19 price base (or an explanation is provided if it is otherwise).



### 3 Funding Request

- |       |   |
|-------|---|
| 3.1.1 | This re-opener application pack is proposing revised outputs, delivery timescales and allowances detailed in Table 2. Ofgem are invited to assess and approve our cost proposal for King's Lynn in line with Special Condition 3.11.  |
| 3.1.2 | Table 5 below sets out the total funding request for NGT to deliver the MCPD scope and associated works at King's Lynn in 2018/19 price base. Further details are included within the separate submission documents and the cost books provided as part of this submission. The direct costs aligned to CEPot represent the allowances requested, as this project is subject to the Opex Escalator (Special Condition 3.18 of the Licence). |

[illegible]

Table 5: April 2025 King's Lynn MCPD Compliance Cost Re-opener Funding Request

## King's Lynn FOSR Baseline Funding

- 3.1.3 [REDACTED]
- 3.1.4 NGT's view is that the current Price Control Deliverable (PCD) is fully delivered given NGT has submitted the FOSR, procured long lead items and submitted this re-opener aligned to Ofgem's approved final preferred option. Table 4 above details the current PCD.

## 4 King's Lynn UIDs

4.1.1 We proposed in our FOSR submission of January 2024 that new UIDs would be progressed through Special Condition 3.11 Compressor Emissions re-opener and Price Control Deliverable as they align with the works proposed at the site.

4.1.2 A summary of the allowance treatment position for each of these UIDs is set out below in Table 6.

UID	Option Name	Site	Baseline Allowance 18/19 Price base	Approach
[REDACTED]	[REDACTED] [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED] [REDACTED]

Table 6: FOSR Allowance UID

## New Proposed UUIDs

4.1.3 Table 7 includes the proposed new UIDs aligned with our re-opener request to apportion out the cost at the delivery stage:

[illegible]

New UID	Funding Type	Intervention Type	Option Name	Unit of Measure	Delivery Theme
██████	█	██████	████████████████████ ████████████████████	██████	██████
██████	█	█ ██████	████████████████████ ████████████████████	██████	██████

Table 7: New Proposed UIDs

# 5 Cost Build up and Estimation Methodology

5.1.1 For the King’s Lynn Unit B Asset Health and Unit A Decommissioning, and to ensure robustness of the EJP costs, NGT employed the use of Designers / Main Works Contractors (MWCs) to validate scope, understand engineering challenges, and build an externally priced estimate reflecting current market costs.

5.1.2 [Redacted]

5.1.3 EJP cost estimates for both Unit B Asset Health and Unit A Decommissioning are considered ‘tendered prices’ i.e. they are based on bottom-up estimates provided by experienced MWCs, using tendered pricing from designers, equipment and material suppliers, and internal estimates for people, plant and machinery. EJP estimates for both are to an accuracy of +/-15%.

5.1.4 [Redacted]

5.1.5 During detailed engineering phase, additional scope was identified that will require further work to ensure robustness of the EJP cost confidence. At this stage the re-wheel scope and costs are preliminary, [Redacted]  
[Redacted]  
[Redacted] Scope and cost will be further refined through the next stage of FEED Conceptual Engineering before arriving at a cost confidence of +/-15%.

5.1.6 NGT Cost and Risk Report (Appendix F) outlines the cost and risk methodology used to establish a comprehensive and transparent framework for the project’s financial planning and risk management. It delineates the systematic approach used to develop NGT’s cost estimates for King’s Lynn Asset Health MCPD project.

Contracting Strategy

5.1.7 NGT have packaged the works associated with the submission themes as follows:

- [Redacted]

- [Redacted]

5.1.8 [Redacted]

- [Redacted]

- [Redacted]

#### King's Lynn Re-opener cost movement from FOSR:

- 5.1.9 In the FOSR submission, which identified and evaluated a range of investment solutions to achieve MCPD compressor emissions compliance, we detailed the broad range of technological, operational and commercial solutions to derive the shortlist of options and cost estimate to an accuracy of +/- 30%. The main purpose of the estimate was to support the commercial evaluation and comparison of the proposed options.
- 5.1.10 Since then, a combination of findings from additional surveys and defects raised have contributed to significant variance in costs when compared to the estimate produced by the Contractor for this re-opener. These include:
- 5.1.11 **Civils and Painting** – This element of scope was not included in FOSR submission but introduced post FOSR FEED surveys to confirm and validate scope between the MWC and NGT SMEs.
- 5.1.12 **Preliminary Spend** – Similarly to the extension of project time / duration, based on the review of scope and deliverability by connection to the MWC cost increase, preliminaries are also increased as the mobilisation is over a longer period.
- 5.1.13 **Revised Scope** – Post survey reviews between SMEs and the MWC to finalise scope have revealed a need to revise scope assumptions made at FOSR stage to address Asset Health issues on sub-assets such as valves, actuators and the exhaust stack, where the initial assumption for major refurbishment has been upgraded to replacement due to the condition of the asset and need to deliver a solution that fully addresses engineering concerns at the best value to the consumers.
- 5.1.14 **New Scope** – Post FOSR surveys have confirmed new essential scope across the Asset Health and Re-wheel projects. Most significant is the replacement of the Non-Return Valves (NRV) and Power Turbine Volute on Unit B and the replacement of the Anti-Surge Valves (ASV) on Units C and D. NGT has assessed the deliverability of the new scope described and ensured that the related programme of works is in alignment with the RIIO-GT3 plan.
- 5.1.15 **Materials** – Material costs have increased overall due to new scope compared to FOSR and moving costs out of NGT direct procured to the MWC costs to ensure that accountability and risk management is clear.
- 5.1.16 **Main Works Contractor costs** – These costs have increased overall as the revalidation exercise has taken place. Costs for the works in re-opener have now been programmed after a detailed deliverability of valve replacement works was undertaken looking at what can be achieved across the RIIO-T2 and RIIO-GT3 period. Subsequently, costs through extension of the works have increased the overall cost. MWC costs are also increased due to new scope for pipework refurbishment and Anti-Surge Valves replacement for the re-wheel project, as detailed in the respective EJP.
- 5.1.17 **Direct Company costs** – Direct costs have increased in line with the revised duration of works across RIIO- GT3 and coincide with the corresponding increase in MWC costs for the same reason.
- 5.1.18 **Engineering Design** – Conceptual and detailed design for the defined scope of works for mechanical and electrical Asset Health interventions have been adjusted in line with works that have already been completed or reassigned to other RIIO-GT3 portfolios as detailed in Table 9.
- 5.1.19 **Project Management** – Overall duration of the project has increased from the original FOSR submission as the delivery programme is now confirmed and phasing of works developed following a deliverability assessment.
- 5.1.20 **Risk and contingency** – The overall risk at 10.62% is within what NGT deem to be appropriate risk coverage for this scope of work. The additional level of detailed work undertaken allowed more robust updates to be made to the QRA which ultimately drives this cost element.
- 5.1.21 Whilst overall costs have increased, it should be noted that in all options considered, Asset Health is required to ensure that the station can remain optimally operational and provide the resilience our customers require until 2050.

## 6 Deliverability

- 6.1.1 [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- 6.1.4 Ongoing close engagement will be required with NGT System Operations to adapt our planning to meet both changes in operational requirements and ensure successful project delivery inside agreed timescales.
- 6.1.5 The delivery programmes are based on level 4 programmes (detailed execution schedule at activity level) from our experienced MWCs, combined with internal NGT estimated timescales that are based on similar projects already delivered and confirmed outages.
- 6.1.6 All three projects have been scheduled largely independent of each other (in sequence), with only a small time overlap between Unit A Decommissioning and Units C and D Re-wheels. This is considered low risk, given Unit A is non-operational (no outage required), and that the projects are to be delivered by different MWCs that will occupy different areas of the site (including MWC welfare provisions).
- 6.1.7 The following challenges are foreseen with other activities and interactions planned at the station, and these have been captured in our planning assumptions:
- **Operationally critical maintenance activities** – Maintenance activities that are undertaken at King's Lynn on fixed intervals driven by Legislative requirements such as Pipeline Safety Regulations (PSR) and Pressure Systems Safety Regulations (PSSR) were fixed in the schedule as they cannot be moved.
  - [REDACTED]

### Risk Methodology

- 6.1.8 NGT's risk methodology is provided within Appendix F (NGT Cost and Risk Report). This document outlines the processes undertaken to understand and quantify the King's Lynn MCPD project's risk exposure. It comprises the steps from the initial, collaborative risk identification workshops and subsequent qualitative and quantitative risk assessments conducted prior to tendering and submission of costs for assessment by Ofgem. It illustrates the risk process and describes its outputs, ultimately informing the steps involved in the calculation of the risk contingency applied for within this submission by NGT moving into the delivery phase.
- 6.1.9 [REDACTED]
- 6.1.10 NGT believe that the requested risk allowance is appropriate for this complex, multi-year capital investment project, a position substantiated as the allowance reflects efficiencies identified through NGT and Contractor, directly incorporating lessons learned.

### Top Three NGT Risks

The top three risks for each of the projects collectively account for a cumulative 24% of the total estimated cost risk exposure across the three MCPD scopes at King's Lynn, underscoring their critical importance to the



project's financial stability.

- 6.1.11 Shifting demand for gas and integration complexity (1) – King's Lynn operations have seen a significant shift in recent years due to geopolitical issues and demand for export of gas via the Bacton Terminal. This presents a level of uncertainty around the availability of outages to undertake the asset health works on Unit B which is currently relied on to contribute to base compression load in certain scenarios. Whilst the outages have been secured to deliver the projects, we cannot foresee export demand as it responds to market changes and unfolding geopolitics.
- 6.1.12 This has been partially mitigated through planning works sequentially, were Units C and D will be re-wheeled ahead of the Unit B Asset Health works, allowing Units C and D to provide the base load compression and reduce reliance on Unit B. The delivery programme has also been optimised with the Cyber Control System Replacement Project and the RIIO-GT3 Business Plan. This will reduce the need to re-arrange the agreed Unit B outages, which would otherwise result in disruption to delivery phasing and programme at additional cost through prolongation.
- 6.1.13 Major Supply Chain Disruption (2) – unit B Asset Health works require purchase of several long lead items:
- 6.1.14 Exhaust Stack – Through preliminary planning it was identified that the delivery of the replacement exhaust stack was on the project critical path therefore any delay in delivery would directly impact completion of the project and increase the cost through prolongation. To mitigate this risk, the programme was modified to include advanced procurement and storage of the exhaust stack ahead of installation which introduced an additional 7-week float in the delivery programme. Delay in Contract award for the exhaust stack beyond Jan 2026 would directly impact the current programme, removing float and result in increased cost through prolongation.
- 6.1.15 Power Turbine Volute – this is another long lead item which was on the secondary critical path. The risk of delayed delivery has been treated in a similar manner as the exhaust stack through early procurement.
- 6.1.16 Scope creep (3) – As the projects are only at FEED stage maturity, there is the risk of scope creep. Expanding requirements without adequate resources would be very challenging to successful delivery. To mitigate this risk, scope creep was assessed through quantified risk assessment (QRA) and two key areas were identified.
- 6.1.17 Pipework Corrosion – Although below ground pipework is protected with Cathodic Protection (CP), pipework coating (the primary source of protection) does break down overtime. Until below ground pipework is exposed during delivery phase, the condition of the coating cannot be confirmed. Additional remedial works may be required at additional cost and time to the project. NGT has had to accept this risk and make provision in the QRA.
- 6.1.18 Cathodic Protection – Although the existing pipework is protected by CP and recent surveys indicate the CP is working effectively, the Unit B asset health works could affect the existing CP system, requiring remedial works at additional cost. NGT has had to accept this risk and make provision in the QRA.
- 6.1.19 We are committed to proactive risk management and strategic opportunity realisation to ensure optimal project outcomes. The detailed risk profiles are available in the Risk Register within the King's Lynn MCPD Cost Book (Appendix A), providing Ofgem with a thorough understanding of our project risk management approach.

### Opportunities

- 6.1.20 In addition to identifying and implementing effective risk mitigation strategies, NGT recognises the importance of proactively identifying and capitalising on opportunities to enhance project value and achieve optimal outcomes.
- 6.1.21 NGT is committed to a strategic approach that prioritises the exploration and realisation of potential efficiencies, innovations and synergistic collaborations on the King's Lynn MCPD projects. This approach is designed to ensure that the project not only meets its core objectives but also maximises its potential to deliver long-term benefits for our customers and consumers.
- 6.1.22 Integral to our opportunity realisation strategy is the application of value engineering principles. NGT will regularly review project components to identify cost-effective alternatives that could maintain or enhance functionality and performance of our compressor fleet throughout the lifecycle of the projects and continuously pursue emerging opportunities including those identified through value engineering exercises.
- 6.1.23 By following this approach, NGT aims to translate identified opportunities into tangible benefits, thus contributing to the overall success of the project.

## 7 Interaction with Asset Management Plan

7.1.1 During the early development stage of the FOSR, NGT identified a potential interaction between the King's Lynn MCPD scope of work and the broader RIIO-GT3 Business Plan submission.

7.1.2 Since then, detailed surveys have been conducted and most of the work will be carried out through MCPD. The primary interaction involves the electrical scopes (MCC LV Switchgear and Distribution Boards) and the replacement of LV Switchgear 110V DC MCC for Unit B. An alignment process ensures that boundaries are clearly defined and prevents double-counting of the same scope or interventions.

7.1.3 Following Ofgem’s confirmation of the preferred option, we have structured our investment strategy based on the following principles:

- Cost re-opener– Short and medium-term ‘no regrets’ investments where immediate investment is necessary. These investments will span over RIIO-T2 and RIIO-GT3.
- RIIO-GT3 Business Plan/Asset Management Plan (AMP) – This process includes longer term investments where assets require intervention but are not included within the FOSR.

7.1.4 Table 8 below is a summary scope assessment of King's Lynn CAPEX projects across MCPD and the RIIO-GT3 Business Plan. Early MCPD FOSR scope was determined following a Remnant Life Survey (RLS) of Unit B.

[illegible]

Unit B Asset Health Scope	Funding Mechanism	Included in FOSR cost submission	Comments
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Table 8: King's Lynn Unit MCPD Vs AMP Works Assessment

7.1.5 The duplication of volumes between this re-opener and RIIO-GT3 Business Plan is highlighted in grey in Table 8. Please see 2.1.9 for further details.

## 8 Conclusion

- 8.1.1 This document summarises the separate products that constitute a part of the MCPD King's Lynn submission, and the overall funding being requested.
- 8.1.2 NGT's funding request predominantly covers investments associated with the short to medium term needs at King's Lynn Compressor Station. The investment spans over two regulatory periods. This document also contains our proposed Price Control Deliverables associated with the delivery of this project.
- 8.1.3 Chapter 5 contains high level outline of how our costs were built up and what cost estimation approach was taken for each of the projects. This is further explained in each EJP.
- 8.1.4 Summary of risk approach has been included in Chapter 6 together with a description of key risks identified. We are committed to proactive risk management and strategic opportunity realisation to ensure optimal outcomes for this project.
- 8.1.5 [REDACTED]
- 8.1.6 Due to the critical nature of our assets and associated operations we are faced with numerous safety, environmental, operational and financial risks should projects described in this document should not be delivered. Delivery of this project by 2030 will ensure that our customers continue receiving gas at volumes and pressures required and are not exposed to constraint costs as a result of unexpected asset shut down or not being suitably mapped to higher flows.
- 8.1.7 Ofgem are invited to assess the funding requests against the applicable license terms as defined within this document.

## 9 APPENDICIES

Document	Filename	File Link
Appendix A	NGT Kings Lynn MCPD - Cost Book	<a href="#">Appendix A - NGT Kings Lynn MCPD - Cost Book Final.xlsx</a>
Appendix B	Assurance Letter	<a href="#">Appendix B - Assurance Statement.pdf</a>
Appendix C	Mapping to Ofgem Requirements	<a href="#">Appendix C - NGT Ofgem Mapping.pdf</a>
Appendix D	King's Lynn Decommissioning Scoping Report	<a href="#">Appendix D - Kings Lynn Compressor A Scoping Survey Report 20-02-2025.pdf</a>
Appendix E	King's Lynn Asset Health Survey Report	<a href="#">Appendix E - Kings Lynn Unit B Asset Health Survey Report.pdf</a>
Appendix F	King's Lynn NGT Client Cost and Risk Report	<a href="#">Appendix F - Kings Lynn NGT Client Cost and Risk Report.pdf</a>
Appendix G	Final Option Selection Report (FOSR)	<a href="#">Appendix G - Kings Lynn Compressor Emissions FOSR.pdf</a>
Appendix H	Remnant Life Study	<a href="#">Appendix H - Kings Lynn Remnant Life Study.pdf</a>
Appendix I	King's Lynn Unit B Defects List	<a href="#">Appendix I - Kings Lynn Unit B Defect List.pdf</a>
Appendix J	King's Lynn Outage Plan	<a href="#">Appendix J - Kings Lynn Outage Plan.pdf</a>
Appendix K	NGT Fleet RAM Study Report	<a href="#">Appendix K - NGT Fleet RAM Study Report v1.pdf</a>
Appendix L	King's Lynn Unit B Asset Health Delivery Programme	<a href="#">Appendix L - Kings Lynn Unit B Asset Health Delivery Programme.pdf</a>
Appendix M	King's Lynn Unit C and D Re-wheel Delivery Programme	<a href="#">Appendix M - Kings Lynn Unit C and D Re-Wheel Delivery Programme.pdf</a>
Appendix N	King's Lynn Unit A Decommissioning Delivery Programme	<a href="#">Appendix N - Kings Lynn Unit A Decommissioning Delivery Programme.pdf</a>
Appendix O	King's Lynn Re-wheel Needs Case	<a href="#">Appendix O - Kings Lynn Re-wheel Needs Case.pdf</a>
Appendix P	King's Lynn Process Duty Specification	<a href="#">Appendix P - Kings Lynn Process Duty Specification.pdf</a>
Appendix Q	King's Lynn Units C and D Compressor Engineering Study	<a href="#">Appendix Q - Kings Lynn Unit C and D Compressor Engineering Study.pdf</a>
Appendix R	King's Lynn Unit A Decommissioning Risk Assessment	<a href="#">Appendix R - Kings Lynn Unit A Decommissioning Risk Assessment 23-01-2025.pdf</a>
Appendix S	King's Lynn Unit A Decommissioning Options Report	<a href="#">Appendix S - Kings Lynn Unit A Decommissioning Options Report.pdf</a>
Appendix T	Kings Lynn Unit B Contractor Cost Estimate Report	<a href="#">Appendix T - Kings Lynn Contractor Cost Estimate Report.pdf</a>

## 10 Glossary

Glossary	
CBA	<b>Cost Benefit Analysis:</b> A mathematical decision support tool to quantify the relative benefits of each site option.
CDS	Conceptual Design Study
COMAH	Control of Major Accident Hazards (COMAH) Regulations 2015. Bacton Terminal is one of two designated NGT COMAH establishments. The other being St Fergus Terminal
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations 2002
EAC	<b>Estimated Cost At Completion:</b> A value expressed in money and/or hours to represent the projected final costs of work when completed.
ECI	Early Contractor Involvement
EJP	Engineering Justification Paper
Entry Capacity	Holdings give NTS users the right to bring gas onto the NTS on any day of the gas year. Capacity rights can be procured in the long term or through shorter term processes, up to the gas day itself. Each NTS Entry point has an allocated Baseline which represents a level of Capacity that NGT is obligated to make available for delivery against on every day of the year
EPC	Engineering Procurement and Construction
Exit Capacity	Holdings give NTS users the right to take gas off the NTS on any day of the gas year. Capacity rights can be procured in the long term or through shorter term processes, up to the gas day itself. Each NTS Exit point has an allocated Baseline which represents a level of Capacity that NGT is obligated to make available for offtake on every day of the year.
FES	<b>Future Energy Scenarios:</b> An annual industry-wide consultation process encompassing questionnaires, workshops, meetings and seminars to seek feedback on latest scenarios and shape future scenario work. The Future Energy Scenarios document is produced annually by National Grid ESO and contains their latest scenarios.
FOS	Future Operating Strategy
FOSR	Final Option Selection Report
GS(M)R	<b>Gas Safety (Management) Regulations:</b> The Gas Safety (Management) Regulations 1996 (GS(M)R) apply to the conveyance of natural gas (methane) through pipes to domestic and other consumers
HSE	<b>Health and Safety Executive</b>
IPA	<b>Infrastructure and Projects Authority</b>
LNG	Liquefied Natural Gas, Natural gas that has been cooled to a liquid state (around -162°C) and either stored and/or transported in this liquid form.
LAV	Locally Actuated Valves



Glossary	
MWC	Main Works Contractor
(G)NDP	<b>Network Development Process:</b> The process by which NGT identifies and implements physical investment on the NTS.
NEA	Network Entry Agreement
NEC	New Engineering Contract
NGT	National Gas Transmission
NTS	<b>National Transmission System:</b> The high-pressure system consisting of Terminals, compressor stations, pipeline systems and offtakes. Designed to operate at pressures up to 94 barg. NTS pipelines transport gas from Terminals to NTS offtakes.
OEM	<b>Original Equipment Manufacturer</b>
Ofgem	<b>Office of Gas and Electricity Markets:</b> The regulatory agency responsible for regulating Great Britain's gas and electricity markets.
PFD	<b>Process Flow Diagram</b>
PV	<b>Process Valves</b>
PSSR	Pressure Systems Safety Regulations 2000
RAM	<b>Reliability Availability Maintainability</b>
Re-opener	Re-openers are a type of RIIO uncertainty mechanism. Depending on their design, they allow Ofgem to adjust a licensee's allowances (in some cases up and in some cases down), outputs and delivery dates in response to changing circumstances during the price control period.
RIIO	<b>Revenue = Incentives + Innovation + Outputs:</b> RIIO-T2 is the second transmission price control review to reflect the framework; it sets out what the transmission network companies are expected to deliver and details of the regulatory framework that supports both effective and efficient delivery for energy consumers.
ROV	<b>Remote Operation Valves</b>
SOL	<b>Safe Operating Limit</b>
Uncertainty Mechanism	Uncertainty mechanisms exist to allow price control arrangements to respond to change. They protect both end consumers and licensees from unforecastable risk or changes in circumstances.
UKCS	<b>United Kingdom Continental Shelf:</b> The UK Continental Shelf (UKCS) is the region of waters surrounding the United Kingdom, in which the country has mineral rights. The UK continental shelf includes parts of the North Sea, the North Atlantic, the Irish Sea and the English Channel; the area includes large resources of oil and gas.
UID	Unique Identifier

**Contact:**

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[nationalgas.com](http://nationalgas.com)