

NGT_AH2_01 Asset Health Overarching Document

Asset Health Reopener

June 2023

Updated September 2023



Issue: 2.2



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Version Control

Version/revision number	Date of issue	Notes
2.0	30 ^h June 2023	Submission to Ofgem
2.1	21 ^s July 2023	Inclusion of Asbestos EJP request into our funding request
2.2	29 ^h September 2023	Resubmission summarises the changes to our investment proposal through the Cab Infrastructure & Fire Suppression System EJP, St Fergus HV Transformer EJP and correcting the number of pit wall transitions intervened upon within the St Fergus Above Ground Corrosion EJP

Executive Summary

This resubmitted UM Overarching Document reflects our revised funding request from our June 2023 submission, reflecting the following changes to the papers highlighted.

NGT_AH2_03 St Fergus HV Transformers EJP

- The total cost of the project has been reduced due to the removal of an element of the scope relating to the length of the cable that is being replaced by the project. We have re-estimated the project based on this scope change and this is detailed within the revised HV Transformer EJP submitted with this document.

NGT_AH2_04 St Fergus Above Ground Pipework Corrosion EJP

- We have corrected the number of pits that we referenced to intervening upon in the paper from [REDACTED], however our original cost estimation was based on [REDACTED] interventions. Our revised paper updates our narrative on this investment and provides a list of the [REDACTED] pits.

NGT_AH2_14 Cab Infrastructure & Fire Suppression System EJP

- All references to Wisbech compressor cabs A and B scopes and associated costs, covering UIDs [REDACTED], [REDACTED], [REDACTED] and [REDACTED], have been removed from the EJP. The uncertainty around the demand and supply scenarios means that the long-term future of Wisbech Compressor Station is currently unclear. Therefore, NGT intend to delay the investment on the Cabs at this site covering UIDs [REDACTED], [REDACTED], [REDACTED] and [REDACTED]. Therefore, this reduces the number of interventions to [REDACTED] compressor sites and [REDACTED] cabs.
- Having completed further analysis, of the June 2023 submission, NGT noted inconsistency between Minor and Major refurbishment UIDs as a result of incorrect categorisation of the interventions for UIDs [REDACTED], [REDACTED], [REDACTED], [REDACTED], [REDACTED] and [REDACTED] and the subsequent derivation of unit costs for years 4 and 5 interventions. A revised analysis of the historical works and associated out turn costs have been carried out, resulting in revised unit costs for years 4&5 of RIIO-2. Section 11, and the accompanying cost book, provide more detail on the specific changes.

To maintain the ongoing safe, secure and reliable operation of the UK Gas National Transmission System (NTS) it is imperative that the health of the assets that constitute the NTS are appropriately managed. NGT is operating assets that are deeply aged with a range of defects that impact on the ongoing operation of the asset systems. Investments in this submission seek to address these issues across the network where doing nothing has the potential to impact on the operation of assets on sites that are critical to meeting security of supply in the UK. This document is National Gas Transmission's (NGT) submission summary to apply for regulatory funding under Special Condition 3.14, Part A and B Asset Health Re-opener (AH) of NGT's Gas Transporter Licence (the Licence)¹. It is an overarching summary document aimed at providing an overview of the funding request and associated outputs relating to asset health investments across the NTS.

¹<https://www.ofgem.gov.uk/publications/direction-and-proposed-directions-under-national-grid-gas-spcs-310-311-and-314>

As our asset health investment RIIO-T2 plans were being developed it became apparent that an emerging volume of investments were not included within our baseline RIIO-T2 plan that could not wait for RIIO-T3, mainly due to the criticality of investment. To manage this risk, and to ensure cost certainty in the submitted products, NGT and Ofgem have agreed a multi-submission window approach for the Asset Health Re-opener, with one submission window in January 2023, one in June 2023 and one in January 2024.

Our June 2023 submission consists of three core elements; eight Engineering Justification Papers (EJPs) aligned to St Fergus Site Strategy², two EJPs aligned to the Bacton Investment Strategy³, and the Compressor Cabs EJP⁴ validating the year 1-3 investments for Compressor Cabs, and defining our year 4 and 5 investments, to set outputs and allowances. Our Bacton and St Fergus investments have been developed in line with respective site investment strategies. These are no regrets investments, not funded through baseline allowances provided as part of Ofgem's Final Determination that cannot wait due to the risk no investment would have on security of supply, resilience and compliance with competent authorities' requirements.

PCD output categories have been defined for all investments included within this submission. Investments that deliver a Network Asset Risk Metrics (NARMs) benefit against a new RIIO-T2 Unique Identifier (UID) have been allocated against the A1, A2 or A3 NARMs asset funding categories as defined by the NARM Handbook⁵. Investments covered by this submission have been allocated against A2 or A3 NARMs asset categories, Non-Lead Assets Price Control Deliverables (PCD) where Long-Term Risk Benefit (LTRB) is not a performance factor.

Our Compressor Cabs EJP provides justification for a range of investments on the sub-systems of our NTS Compressor Cabs, which are to be completed in years 4 and 5 or RIIO-T2. In addition, it provides information on the investments completed and those in-flight against the (Years 1-3) baseline allowances awarded. This enables allowances and outputs to be set across the full 5-year period, in line with paragraph 1.3 of the Asset Health Non-lead assets PCD Annex. The St Fergus EJPs, summarised within an accompanying Site Strategy paper, cover a range of investments including electrical systems, critical valves, Plant 2 Aftercooler and above and below ground pipework. The Bacton EJPs, summarised in the Bacton Investment Strategy, covers investment in Enhanced Filtration and investment on our High Integrity Pressure Protection System (HIPPS) to address an HSE Action Legal notice received in January 2022.

NGT's total funding request within the June 2023 Asset health Reopener submission, across all investment themes, is **£135.978m**. This includes direct and indirect costs for requested funding under licence terms NLAH0t and NARMAH0t and direct costs only for AHt (see section 4 for further detail on how the different funding request have been aligned to the named licence terms).

² NGT AH2 02 St Fergus Site Strategy

³ NGT AH2 14 Bacton Investment Strategy

⁴ NGT AH2 17 Cab Infrastructure and Fire Suppression System

⁵ <https://www.ofgem.gov.uk/publications/decision-proposed-modifications-riio-2-transmission-gas-distribution-and-electricity-system-operator-licence-conditions-1-april-2022>

The table below provides a breakdown per license condition and submission product, with further details included within the document.

License Condition / Submission Product			£m - 18/19 prices									
			Sub Window	2022	2023	2024	2025	2026	RIIO-T2 Total	2027	2028	RIIO-T3 Total
AHt												
NGT_AH2_08	St Fergus Cabs Asbestos Mitigation	Jun-23										
NGT_AH2_14	Cabs RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NGT_AH2_15	Plant & Equipment RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NLAHt												
NGT_AH2_14	Cabs Infrastructure & Fire Suppression Systems Yrs 1-3 Additional Request	Jun-23										
	Cabs Infrastructure & Fire Suppression Systems Yrs 4-5	Jun-23										
NARMAHt												
NGT_AH2_03	St Fergus HV Transformers	Jun-23										
NGT_AH2_04	St Fergus Above Ground Pipework Corrosion	Jun-23										
NGT_AH2_05	St Fergus HV Switchgear	Jun-23										
NGT_AH2_06	St Fergus Priority Valves (Phase 1)	Jun-23										
NGT_AH2_07	St Fergus Plant 2 Aftercooler	Jun-23										
NGT_AH2_09	St Fergus LV Switchgear & MCCs	Jun-23										
NGT_AH2_10	St Fergus Distribution Boards	Jun-23										
NGT_AH2_12	Bacton Overpressure Protection	Jun-23										
NGT_AH2_13	Bacton Filtration	Jun-23										
AHt June Total												6.917
NLAHt June Total												23.0202
NARMAHt June Total												106.040
Grand Total June												135.978

To reduce the risk of delayed investment initiation, NGT proposes to undertake surveys within the RIIO-T2 period to identify potential Asset Health works for the next regulatory period (RIIO-T3) covering the Cab Infrastructure, Valves and Structural Integrity investment themes. Survey scope and costs have been developed and are requested in this submission within the Compressor Cabs product.

1. Summary Table

1.1 NGT’s request for funding through this document is made against the Asset Health (AHt) reopener license condition 3.14 and is outlined in Table 1. This is aligned to the Regulatory Reporting Pack (RRP).

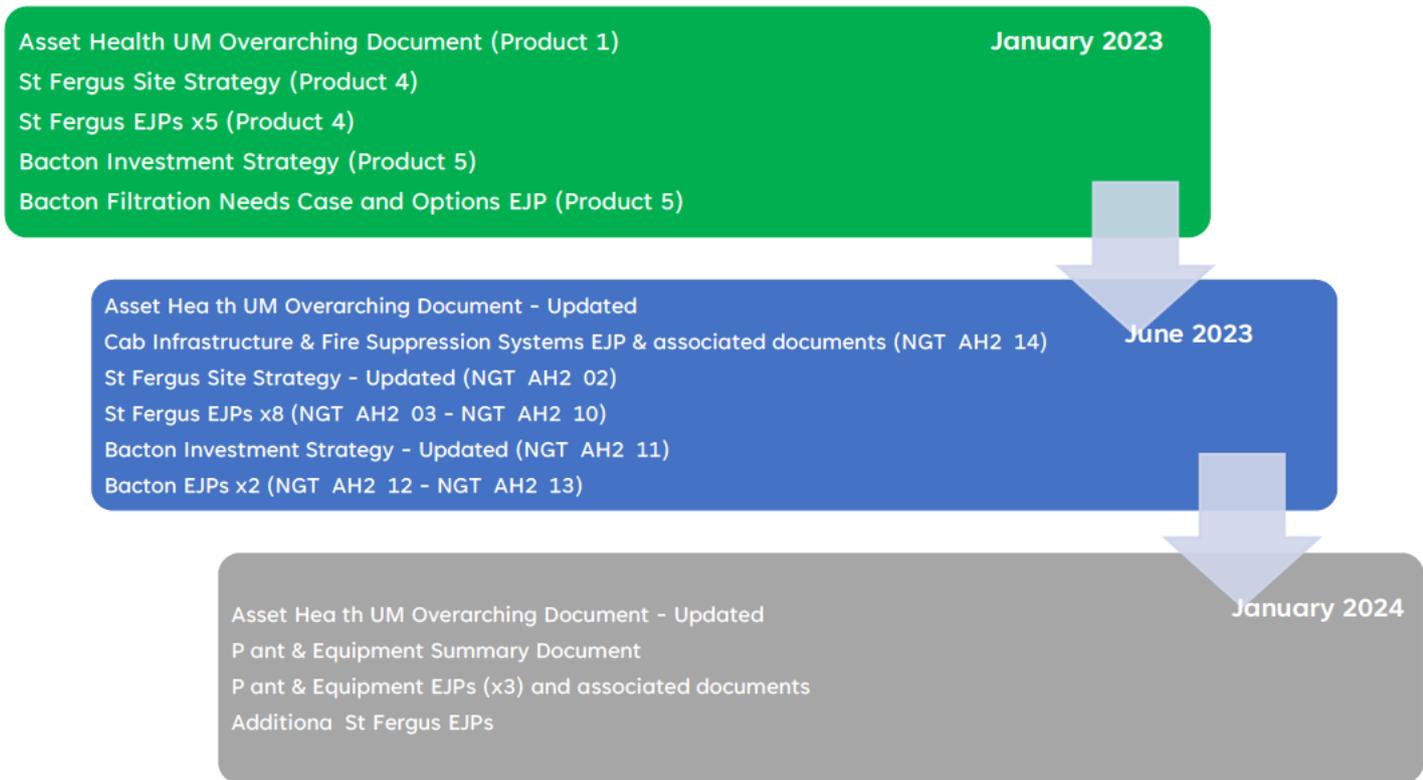
Table 1: Asset Health Summary Table (June 2024)

Name of Scheme/Programme	Asset Health Reopener (AH)
Primary Investment Driver	Asset Health
Scheme Reference / Mechanism or Category	SpC 3.14 – Asset health Re-opener: Adjusting the values of the following terms: <ul style="list-style-type: none"> ○ AH – defined in SpC 3.14 ○ NARMAHO – defined in SpC 3.1 – Baseline Network Risk Outputs ○ NLAHO – defined in SpC 3.15 – Asset Health -non-lead assets PCD
June Submission Cost (18/19 price base)	£135.978m
Cumulative Cost request (18/19 prices)	£180.582m (Across January 23 & June 23 AH Reopener Windows)
Delivery Year	2021-2027
Reporting Table	RRP Table 6.3 (Asset Health) and Table 6.4 (Asset Health Projects)

2. Introduction

- 2.1 This document (‘Asset Health Overarching Document’) is submitted to provide the funding request to meet National Gas Transmissions (NGT’s) license obligations for Special Condition 3.14 and covers elements to adjust licence terms defined in Special Conditions 3.1, 3.14 and 3.15. These licence obligations encompass Compressor Cabs and Plant and Equipment Asset Health themes across the NTS as well as Asset Health investments at St Fergus and Bacton. This document is an update to the document of the same name submitted as part of our January 2023 Asset Health Re-opener submission.
- 2.2 Guidance on the submission structure, the individual products and summary of the overall funding request are included in this document, which will be presented in addition to the funding previously requested in our January 2023 Asset Health submission. In our package of subsidiary documents further detail and justification for investments and the strategies that underpin these are provided.
- 2.3 Our submission is made under the second of three Asset Health license Re-opener application windows as defined in 3.14, Part B. The first was January 2023, followed by this submission window (June 2023). Our reopener submission is split into several products, each with supporting EJPs. This is summarised pictorially in Figure 1 below.

Figure 1 Asset Health Re-opener Submissions



- 2.4 In line with previously submitted St Fergus and Bacton site strategies our submission includes funding for ongoing no regrets asset health investments at both terminals and funding to continue asset health investments against the Cab Infrastructure and Fire Suppression systems across the NTS.
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- 2.5 This document is an updated version of that submitted in January 2023. It shall be updated and resubmitted for the January 2024 reopener window, along with additional submission products to provide the overarching view of NGT's funding request against the relevant license conditions.
- 2.6 All costs presented in this document are in a 2018/19 price base.

3. Background and Context

3.1 To maintain the ongoing safe, secure and reliable operation of the UK Gas NTS it is imperative that the health of the assets that constitute the NTS is managed. NGT is operating assets that are deeply aged with a range of defects that impact on the ongoing operation of the asset systems. Investments in this submission seek to address these issues across the network where doing nothing has the potential to impact on the operation of assets on sites that are critical to meeting security of supply in the UK. NGT's submission through the Asset Health Reopener (AHT) license condition includes a range of supplementary documents that provide justification for a range of interventions to ensure NGT maintains this position, providing additional justification to that afforded at the time of the RIIO-T2 Business Plan Submission in December 2019.

3.2 The investments, constituting the AHT, NARMAHOT and NLAHOT license terms, are split into four broad investment themes:

- Cabs
- Plant & Equipment
- Bacton Investment Strategy
- St Fergus Site Strategy

St Fergus Site Strategy (June 2023 submission) – A two-phase strategy has been adopted to ensure clarity between short-term asset health and long-term site operating strategies. The St Fergus short-term strategy provides certainty on the terminal operation requirements, including minimum compression across Plant 1 and 2, for operation out to 2030. The long-term strategy will deliver the enduring terminal solution, including gas compression, required for operation beyond 2030. This was submitted within our Final Option Selection Report in January 2023. The outcome of the Site Strategy has been the development of several investment needs cases on assets across the site. Eight EJPs are included with this June 2023 submission, covering a range of asset health interventions on electrical systems, priority valves, Plant 2 Aftercooler together with above and below ground pipework with funding requested through this Asset health Re-opener submission.

Bacton Investment Strategy - Phase 1 (June 2023 submission) – Progression of our investment plans against our Phase 1 and 2 Investment strategy has resulted in the acceleration of a few no regrets investments at the site. Within phase 1 investments were categorised as 'Accelerated', due to the impact the problem is posing to terminal operations with 'Medium-Term' investments categorised due to problems the asset condition was posing to ongoing terminal operation. Investments are no regret against the long-term site option in development through our future operating strategy workstream⁶. Funding requests are proposed through both Asset Health Re-opener submissions and our Future Operating Strategy Submission.

Two EJPs are included within this June submission, one to request funding to comply with a HSE Action Legal notice and a second to request funding for the preferred option from our Enhanced

⁶ This work will be delivered under SpC 3.10 Bacton terminal site redevelopment Re-opener and Price Control Deliverable

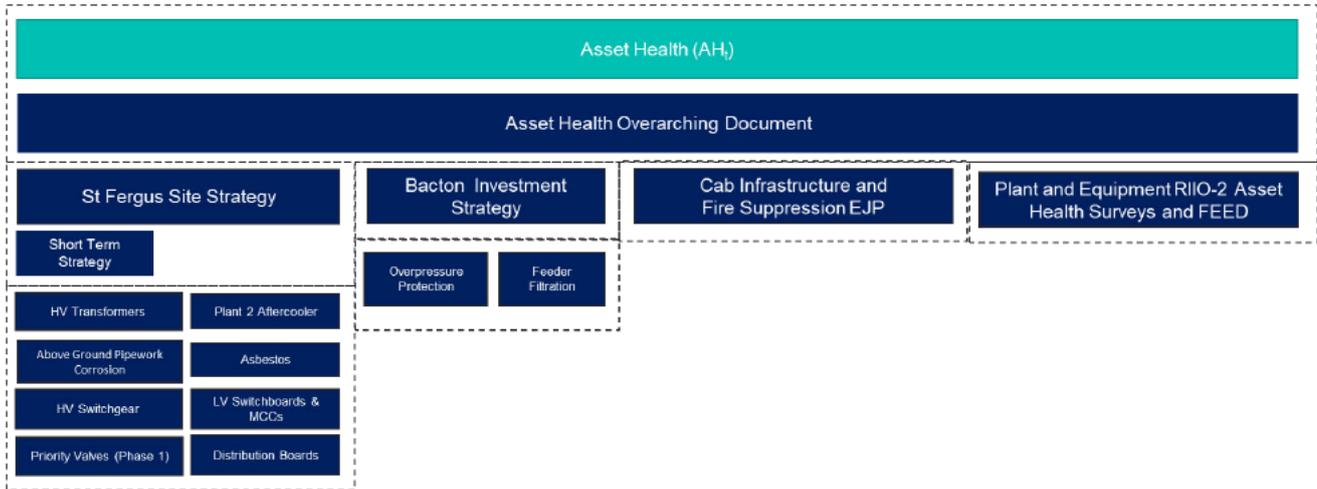
Filtration EJP submitted in the January 2023 asset health window. Over recent months conversations on our filtration investments have evolved with the Department for Energy Security & Net Zero (DESNEZ) and Ofgem. However, given the consequence of no investment we have including our funding request for this investment within the June 2023 window.

Compressor Cabs (June 2023 submission) – This investment theme covers a range of secondary assets fundamental to the safe operation of compressor machinery trains. Investments ensure compliance with environmental and safety legislation in addition to resolving faults and degradation-based defects and ensure that our compressor cab infrastructure meets the changing need from these assets. Following completion of site surveys and optioneering assessments, a programme of additional investments on [REDACTED] cabs across [REDACTED] sites were identified. Our submission seeks to set and confirm allowances for investments in years 1-3 and agree interventions and allowances for investments in years 4 & 5. To reduce the risk of delayed investment initiation, NGT proposes to undertake surveys within the RIIO-T2 period to identify potential Asset Health works on our Cab Infrastructure & Fire Suppression assets for the next regulatory period (RIIO-T3)

Plant & Equipment (January 2024 submission) – This investment theme covers a wide range of primary assets that contain and control the gas flows at Above Ground Installations on the NTS. These assets are covered by safety legislation and in many cases have been in operation beyond their original life of 40 years. In this June submission we have included a funding request to progress Asset Health Surveys and FEED activities for investments to be delivered in RIIO-3. Our strategic approach is to utilise a 10-year proactive corrosion management approach utilising our National AGI Renovation Campaign (NARC) Delivery model. Our funding request is in line with this strategic approach.

The figure below, provides a summary of the structure and submitted products included within our June 2023 Asset Health Re-opener Submission.

Figure 2 June Asset Health Reopener Submission



For our June submission each document has been assigned a product number to aid the reconciliation between each of the individual EJPs and this Overarching document. The table below (Table 2) provides further details of the products that are included in our June 2023 Asset Health Re-opener submission, their reference number and a description of the document.

Table 2 June 2023 Asset Health Reopener Submission products

Asset Health Reopener June 2023 Submission Structure Summary		
Product No	Product Name	Description
NGT_AH2_01	Asset Health Overarching Document	Document providing an overarching funding request to meet NGT licence obligations (Special Condition 3.14) covering a five submission products
NGT_AH2_02	St Fergus Site Strategy	Document focusing on the summary detail of the St Fergus Asset Health Submission and funding requests. Submitted in January 2023 and an updated version resubmitted in this June window.
NGT_AH2_03	HV Transformers	Paper providing justification and a funding request for the replacement of high voltage (HV) Transformers at St. Fergus Gas Terminal
NGT_AH2_04	Above Ground Pipework Corrosion	Paper providing justification and a funding request for the remediation of existing corrosion (CM/4 Cat 4/5/6) defects and pro-active prevention / reduction of future defects through a sequenced pro-active paint programme at St. Fergus Gas Terminal .
NGT_AH2_05	HV Switchgear	Paper providing justification and a funding request for the replacement of the high voltage (HV) switchgear at St. Fergus Gas Terminal
NGT_AH2_06	Priority Valves (Phase 1)	Paper providing justification and a funding request for the replacement of defected valves at the St. Fergus Gas Terminal
NGT_AH2_07	Plant 2 Aftercooler	Paper providing justification and a funding request for the replacement of Plant 2 Aftercooler at St Fergus Gas Terminal .
NGT_AH2_08	Cabs Asbestos Mitigation	Paper providing justification and a funding request to address asbestos within Units 1A, 1B, 1C and 1D cabs, being retained to 2030 at St. Fergus Gas Terminal
NGT_AH2_09	LV Switchboards and MCC	Paper providing justification and a funding request for the replacement of LV switchboards and MCCs at St. Fergus Gas Terminal
NGT_AH2_10	Distribution Boards	Paper providing justification and a funding request for the replacement of distribution boards at St. Fergus Gas Terminal

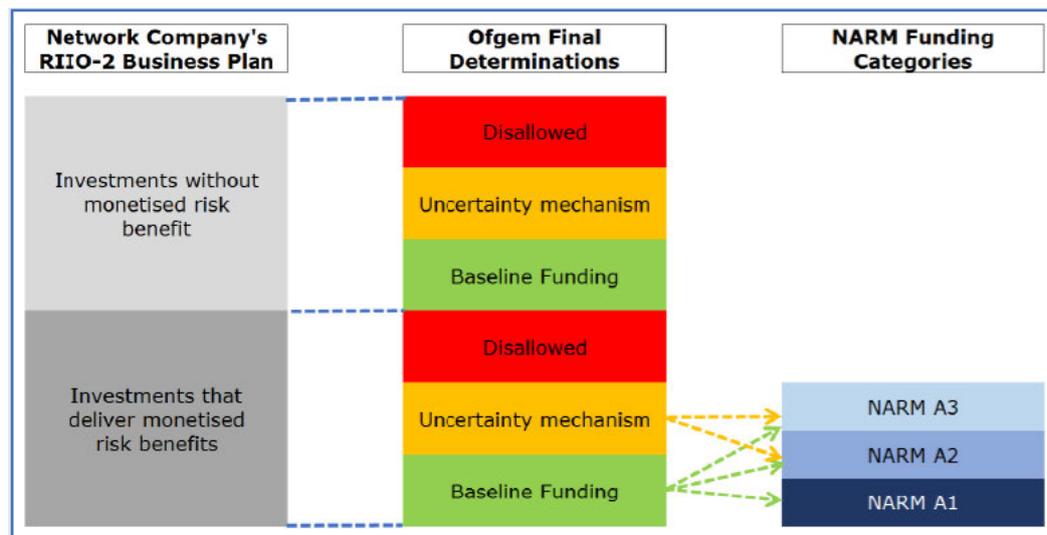
Asset Health Reopener June 2023 Submission Structure Summary		
Product No	Product Name	Description
NGT_AH2_11	Bacton Investment Strategy	Document providing strategic direction for NGT's short, medium and long-term investment proposals at Bacton Gas Terminal.
NGT_AH2_12	<i>Overpressure Protection</i>	Paper providing justification and a funding request for investment to improve our overpressure protection systems at Bacton Gas Terminal, following an HSE inspection.
NGT_AH2_13	<i>Bacton Enhanced Filtration</i>	Paper providing justification and a funding request for interventions to reduce solids being transported through Bacton Gas Terminal.
NGT_AH2_14	Cab Infrastructure and Fire Suppression System	Paper providing justification and a funding request to ensure our cab infrastructure assets and associated fire suppression systems across the whole NTS operate to the required legislative and safety policies. Includes a funding request for surveys to be conducted in RIIO-T2 to reduce the risk of delayed investment initiation.
NGT_AH2_15	Plant & Equipment RIIO-2 Asset Health Surveys and FEED	Paper providing justification to commence Asset Health condition assessment surveys and Front-End Engineering Design (FEED) for identified Plant and Equipment (P&E) assets for the first two years (2026/27 and 2027/28) of RIIO-3.

A full list of the products submitted in the January and June 2023 Asset Health Reopener submission windows can be found in Appendix 1.

4. License Conditions and Outputs

- 4.1 Special Condition 3.14 of the NGT Licence, relates to the Asset Health Re-opener (AHT) and enables NGT to request adjustment to the value against following license terms:
- AHT;
 - NARMAHOT; and
 - NLAHOT.
- 4.2 The Asset Health Reopener (AHT) provides the mechanism for the submission, with the Non-Load Asset Health (NLAHOT) and NARMs Asset Health investment (NARMAHOT) terms and reopeners directed in accordance with Special Condition 3.14.
- 4.3 In accordance with license condition 3.14 NGT's Asset Health Reopener submission seeks to modify all three values within the GT2 Price Control Financial Model (PCFM).
- 4.4 The RIIO-T2 Business Plan Final Determinations set out a number of output metrics. The two main metrics relevant for this submission are:
- Network Risk Outputs (NARMs), and
 - Non-lead Assets Price Control Deliverables (PCDs).
- 4.5 NARMs is a method created by Ofgem for RIIO-T2 to measure the long-term monetised risk benefits (LTRB) delivered by investments (corresponding to the life of the asset, or intervention). There are three NARM Funding Categories A1, A2 and A3, with the definition of these below:
- **NARM A1** - work that delivers against NGT's overall LTRB target and will cause an adjustment to Baseline Network Risk Output (BRNO) and contribute to Outturn Network Risk Output (ONRO).
 - **NARM A2** – New UIDs (work outside of the NARMs funding)
 - **NARM A3** - Ring-fenced Project/Activity: this is work that will deliver Network Risk Outputs, but which is not within the scope of the NARM Funding Adjustment and Penalty Mechanism. The Network Risk Output associated with this work will not contribute to a company's final ONRO.
- 4.6 Figure 3, overleaf, summarises the NARM funding categories and their relationship to the RIIO-T2 Business Plan and Final Determinations.

Figure 3 NARM Funding Categories and relationship to RIIO-T2 Business Plans and Final Determinations



4.7 Following discussions with Ofgem in the NARM Development Monthly Meetings, the initial view, while not finalised, is that any work proposed against pre-existing RIIO-T2 baseline funded UIDs in the NARMs A1 category will lead to a restatement of the target (as of SpC 3.1, Part C). Any new UIDs created for investment will automatically fall into the NARMs categories A2/A3 and could result in an update of the Asset Health Non-lead assets PCD Annex (as per SpC 3.14.4).

4.8 It is proposed that all the investments arising from the re-openers shall result in one update to the Network Asset Risk Workbook (NARW) following the process described in Special Condition 3.1, Part C: Rebasings of Baseline Network Risk Outputs. This is to be conducted following Ofgem’s licence direction following the January 2023 Asset health Reopener determination.

4.9 In alignment with the RIIO-2 submission outcomes Cab Infrastructure and Fire Suppression Systems investments have an associated Asset health non-lead asset PCD. NGT, through EJP NGT_AH2_17 Cab Infrastructure and Fire Suppression Systems have proposed an update to the volume and cost allowances within this PCD.

4.10 Detail has been provided within each submission on the specific output and the rationale for this. For each of the submitted products we have undertaken an assessment of the applicable license category (NARMAH0t, NLAH0t or AHt). Table 3, in section 5, summarises this with the associated funding request.

4.11 The table in Appendix 2 provides further details on the June submission products, the UIDs for associated works and a definition and proposed NARM funding categories for these UIDs. These will be used for reporting in FY24.

5. Funding Request

5.1 This section provides information on the overarching funding request through our June 2023 Asset Health Reopener submission, comprising of eight St Fergus asset health EJPs, two Bacton asset health EJPs and the Compressor Cabs EJP.

5.2 This document version presents the funding request for the EJPs against the aforementioned licence terms. A breakdown of the individual funding requests, totalling the June 2023 Asset Health reopener funding request for RIIO-T2 through the various referenced documents, is provided in Table 3 in 2018/19 price base. The profile of investments within the RIIO-T2 period are also shown.

5.3 Currently the three asset health terms of AHt, NARMAHOT and NLAHOT have no associated values within the Licence and Price Control Financial Model (PCFM), as the January 23 reopener decision is still to be finalised. The allowances stated within Table 3 represent the additional request for these terms being made in the June 2023 Asset Health Re-opener submission and do not contain our January 2023 request. The values within Table 3 include both direct and indirect costs relating to the project, as currently both NARMAHOT and NLAHOT are not included within the formula contained within Special Condition 3.18 Opex Escalator.

Table 3 June 2023 Asset Health Funding Request

			£m - 18/19 prices									
License Condition / Submission Product		Sub Window	2022	2023	2024	2025	2026	RIIO-T2 Total	2027	2028	RIIO-T3 Total	Total
AHt												
NGT_AH2_08	St Fergus Cabs Asbestos Mitigation	Jun-23										
NGT_AH2_14	Cabs RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NGT_AH2_15	Plant & Equipment RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NLAHOT												
NGT_AH2_14	Cabs Infrastructure & Fire Suppression Systems Yrs 1-3 Additional Request	Jun-23										
	Cabs Infrastructure & Fire Suppression Systems Yrs 4-5	Jun-23										
NARMAHOT												
NGT_AH2_03	St Fergus HV Transformers	Jun-23										
NGT_AH2_04	St Fergus Above Ground Pipework Corrosion	Jun-23										
NGT_AH2_05	St Fergus HV Switchgear	Jun-23										
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NGT_AH2_07	St Fergus Plant 2 Aftercooler	Jun-23										
NGT_AH2_09	St Fergus LV Switchgear & MCCs	Jun-23										
NGT_AH2_10	St Fergus Distribution Boards	Jun-23										
NGT_AH2_12	Bacton Overpressure Protection	Jun-23										
NGT_AH2_13	Bacton Filtration	Jun-23										
AHt June Total												6.917
NLAHOT June Total												23.0202
NARMAHOT June Total												106.040
Grand Total June												135.978

5.4 The table in Appendix 3 provides an overall funding request/determination position, combining the previously submitted January 2023 Asset Health funding request with our request within this June 2023 window.

5.5 Appendix 4 comprises the June 2023 Asset Health Re-opener Assurance Letter while Appendix 5 highlights NGT's mapping to Ofgem requirements.

6. Forward View

Summary

6.1 In addition to the products submitted during the January 2023 and June 2023 Asset Health Re-opener windows, NGT has been developing and progressing its plans for the January 2024 Asset Health Re-opener window. This section of the report provides an overview of our preparation for this window and the likely submission products.

Progression of Plant & Equipment AH Re-opener

6.2 For our Plant & Equipment submission, data collection, collation and assessment are ongoing. Outputs of years 1 to 3 funded investments are being used to collate and assess unit costs.

6.3 Surveys for year 4 sites for Plant and Equipment have been completed while year 5 surveys are in flight. The subsequent technical and benefits assessments for year 4 and 5 are in progress following survey (completion estimated for Autumn 2023). This will underpin the associated funding request for this submission in January 2024.

6.4 Across the network there has been progression on a number of strategic asset management projects. The outputs from these projects have resulted in proposed investment outcomes and these are proposed to be included as part of our Plant & Equipment reopener within the January 2024 Asset health Reopener window.

6.5 Investment areas include asset health concerns at King's Lynn AGI, funding associated with the progression of our Condensate Tank Strategy, funding to address the Easington High Integrity Pressure Protection System (HIPPS) and a project to address a Health and Safety Executive (HSE) Action Legal around unprotected slam shut bypass assets.

Bacton

6.6 In accordance with our Bacton Investment Strategy we are progressing the development for several investments at the site on the Electrical Systems, Valves and Cathodic protection systems. These investments need to be progressed due to the current condition of the systems and the consequence of failure, which has the potential to impact on terminal operations and the 365/24/7 operation of the site.

6.7 Our proposal is to submit the Bacton FOS Final Options Selection Report (FOSR) in [REDACTED], detailing our preferred option to ensure Bacton terminal meets our customer's requirements now and up to 2050. We are evaluating our position in regard to requesting funding through either the asset health reopener or Bacton terminal Redevelopment license conditions for the aforementioned works and the current dates for submission. Funding requests for these investments may be included in our January 2024 Asset Health re-opener submission.

St Fergus

6.8 In accordance with our Site Fergus Site Strategy we are proposing to develop further no regrets asset health scopes for inclusion in our January 2024 Asset Health Reopener submission. Three investments have currently been identified for potential inclusion in this window, these being on the Fuel Gas Heating System, Standby Generators and Fire Water Ring Main asset systems. We are progressing these investments where baseline funding exists, which will enable us to evaluate whether the existing funding is sufficient to deliver the required investment. Development of a number of additional investments is also proposed to progress prior to our January 2024 submission for no regrets asset health investments at the site to ensure the ongoing 24/7/365 operation of the site, including investment on our Tanks and Bunds.

RIIO-3 Advanced Surveys

6.9 To reduce the risk of delayed investment initiation, within RIIO-T2 NGT proposes to undertake surveys to quantify potential Asset Health works for the next regulatory period covering the Cab Infrastructure & Fire Suppression and Plant & Equipment themes. The latest view is that there will be approximately [REDACTED] P&E sites and [REDACTED] Cabs to survey. These surveys will cover a range of asset types including Cab Infrastructure and Fire Suppression systems, Valves, Civils, Filters.

6.10 Our June Submission has requested funding to commence these surveys to ensure the output can feed into our RIIO-T3 planning. As teams are finishing RIIO-T2 years 4 and 5 related surveys, it is prudent that these teams are engaged early to proceed with RIIO-T3 related survey activities, immediately following completion of the year 4 and 5 UM surveys to avoid unnecessary demobilisation and re-mobilisation costs. Within this submission NGT is requesting funding to complete these proposed surveys and associated assessments.

6.11 NGT’s current view of identified sites and assets targeted for survey within RIIO-T2, to inform the initial RIIO-T3 years of work is summarised in *Table 4*. The total funding request included within the EJP ‘Plant and Equipment RIIO-2 Asset Health Surveys and FEED’ is [REDACTED] while the total RIIO-2 element of funding requested for the Cab Infrastructure and Fire Suppression theme is [REDACTED].

Table 4: Sites and assets targeted for survey within RIIO-2 to inform RIIO-3 investments.

Asset Health Theme	Current view of number of sites / cabs
Plant and Equipment	[REDACTED]
Cab Infrastructure and Fire Suppression	[REDACTED]

7. Conclusion

7.1 This document summarises the separate products that constitute our June Asset Health Uncertainty Mechanism reopener submission and the overall funding being requested through this submission. Ofgem are invited to assess the funding requests against the applicable license terms as defined within this document.

7.2 NGTs overall funding request covers a range of St Fergus Asset Health investments, Bacton Asset Health investments and investment associated with our Cab Infrastructure and Fire Suppression Systems across the NTS.

7.3 NGT's total funding request within the June 2023 Asset health Reopener submission, across all three investment themes, is **£135.978m**, and is summarised in table 5 below.

Table 5 June Asset Health Reopener Request Summary

			£m - 18/19 prices									
License Condition / Submission Product		Sub Window	2022	2023	2024	2025	2026	RIIO-T2 Total	2027	2028	RIIO-T3 Total	Total
AHt												
NGT_AH2_08	St Fergus Cabs Asbestos Mitigation	Jun-23										
NGT_AH2_14	Cabs RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NGT_AH2_15	Plant & Equipment RIIO-2 Surveys and FEED for RIIO-3	Jun-23										
NLAHOT												
NGT_AH2_14	Cabs Infrastructure & Fire Suppression Systems Yrs 1-3 Additional Request	Jun-23										
	Cabs Infrastructure & Fire Suppression Systems Yrs 4-5	Jun-23										
NARMAHOT												
NGT_AH2_03	St Fergus HV Transformers	Jun-23										
NGT_AH2_04	St Fergus Above Ground Pipework Corrosion	Jun-23										
NGT_AH2_05	St Fergus HV Switchgear	Jun-23										
NGT_AH2_06	St Fergus Priority Valves (Phase 1)	Jun-23										
NGT_AH2_07	St Fergus Plant 2 Aftercooler	Jun-23										
NGT_AH2_09	St Fergus LV Switchgear & MCCs	Jun-23										
NGT_AH2_10	St Fergus Distribution Boards	Jun-23										
NGT_AH2_12	Bacton Overpressure Protection	Jun-23										
NGT_AH2_13	Bacton Filtration	Jun-23										
AHt June Total												6.917
NLAHOT June Total												23.0202
NARMAHOT June Total												106.040
Grand Total June												135.978

Appendix 1 – Table of Products

Appendix 1: Table of Products			
Product Nos	Product (Name)	Description	Status
NGT AH2 01	Asset Health UM Overarching Document	This document providing an overarching regulatory Asset Health funding request to meet NGT license obligations.	<ul style="list-style-type: none"> Submitted in Jan' 23. Resubmitted in June 23
NGT AH2 14	Cab Infrastructure and Fire Suppression EJP	Document providing justification for Cab Infrastructure & Fire Suppression interventions across the NTS for RIIO-2 (Years 1 to 3 and Years 4&5).	<ul style="list-style-type: none"> Submitted in Jun' 23.
	P ant & Equipment Engineering EJPs	Document providing justification for P ant & Equipment interventions across the NTS for years 4 and 5 of RIIO-2.	<ul style="list-style-type: none"> Submitting in Jan' 24.
NGT AH2 15	P ant and Equipment RIIO-2 Asset Health Surveys and FEED	Paper providing justification to commence Asset Health condition assessment surveys and Front-End Engineering Design (FEED) for identified P ant and Equipment (P&E) assets for the first two years (2026/27 and 2027/28) of RIIO-3	<ul style="list-style-type: none"> Submitted in Jun' 23.
	Re-base line NARMS Annex Special Condition 9.2 Network Asset Risk Metric	Document providing and update of the NARMS target and the Network Asset Risk Workbook (NARW) of the investments that arise from a the UMs.	<ul style="list-style-type: none"> P an to submit post Jan' 24
NGT AH2 02	St Fergus Site Strategy	Document focusing on the summary detail of the St Fergus Asset Health Submission and funding requests, being submitted in January 2023.	<ul style="list-style-type: none"> Submitted in Jan' 23. Resubmitted in June 23
	St Fergus Actuators EJP	Paper providing justification for the removal of gas actuating pipework and subsequent replacement of key actuators at St Fergus gas terminal .	<ul style="list-style-type: none"> Submitted in Jan' 23.
	St Fergus P ant 1 Aftercooler EJP	Paper providing justification for replacement intervention on P ant 1 Aftercooler at St Fergus Gas Terminal .	<ul style="list-style-type: none"> Submitted in Jan' 23.
	St Fergus Avon Operability EJP	Paper providing justification for works to reinstate Unit 2B at St Fergus Gas Terminal . This is to ensure the site has sufficient short-term reliability due to impact of LCPD deadline of 31/12/2023 and overall reliability up to 2030 at St Fergus Gas Terminal	<ul style="list-style-type: none"> Submitted in Jan' 23.
	St Fergus Unit Decommissioning EJP	Paper providing justification for the removal of Units 2C and 2D at St Fergus Gas Terminal .	<ul style="list-style-type: none"> Submitted in Jan' 23.
	St Fergus Cathodic Protection EJP	Paper providing justification for replacement of the Cathodic Protection (CP) system at St Fergus Gas Terminal .	<ul style="list-style-type: none"> Submitted in Jan' 23.
NGT AH2 07	St Fergus P ant 2 Aftercooler EJP	Paper providing justification and a funding request for intervention on P ant 2 Aftercooler at St Fergus Gas Terminal .	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 03	St Fergus HV Transformers	Paper providing justification and a funding request for the replacement of the high voltage (HV) Transformers at St. Fergus Gas Terminal	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 04	St Fergus Above Ground Pipework Corrosion	Paper providing justification and a funding request for the remediation and prevention of CM/4 defects identified on above ground pipework through the routine and non-routine maintenance activities at St. Fergus Gas Terminal .	<ul style="list-style-type: none"> Submitted in June 23.

Appendix 1: Table of Products			
Product Nos	Product (Name)	Description	Status
NGT AH2 05	<i>St Fergus HV Switchgear</i>	Paper providing justification and a funding request for the replacement of the high voltage (HV) switchgear at St. Fergus Gas Terminal	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 06	<i>St Fergus Priority Valves (Phase 1)</i>	Paper providing justification and a funding request for the replacement of valves at the St. Fergus Gas Terminal	<ul style="list-style-type: none"> Submitted in June 23.
	<i>St Fergus Fuel Gas Heating</i>	Paper providing justification and a funding request to upgrade of the fuel gas heating system at the St. Fergus gas terminal	<ul style="list-style-type: none"> Plan to submit in Jan 24.
	<i>St Fergus Standby Generators</i>	Paper providing justification and a funding request for the most optimum and cost-effective investment to ensure a balance between cost, risk, and performance of the standby generators	<ul style="list-style-type: none"> Plan to submit in Jan 24.
	<i>St Fergus Fire Water Ring Main</i>	Paper providing justification and a funding request justification to ensure the required level of availability and reliability of the Fire Water Ring Main assets is achieved	<ul style="list-style-type: none"> Plan to submit in Jan 24.
NGT AH2 08	<i>St Fergus Cabs Asbestos Mitigation</i>	Paper providing justification and a funding request to address asbestos on Avon units being retained to 2030.	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 09	<i>St Fergus LV Switchboards and MCCs</i>	Paper providing justification and a funding request for the optimum investments on LV switchboards and MCCs	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 10	<i>St Fergus Distribution Boards</i>	Paper providing justification and a funding request for the replacement of distribution board assets at St. Fergus Gas Terminal	<ul style="list-style-type: none"> Submitted in June 23.
	<i>St Fergus additional EJPs</i>	Additional Investments scopes in development to be progressed	<ul style="list-style-type: none"> Plan to submit in Jan 24.
NGT AH2 11	<i>Bacton Investment Strategy</i>	Document providing strategic direction for NGT's short, medium and long-term investment proposals at Bacton.	<ul style="list-style-type: none"> Submitted in Jan' 23. Resubmitted in June 23
NGT AH2 12	<i>Overpressure Protection</i>	Paper providing justification and a funding request for investment to improve our overpressure protection systems at Bacton Gas Terminal, following an HSE inspection.	<ul style="list-style-type: none"> Submitted in June 23.
NGT AH2 13	<i>Bacton Enhanced Filtration</i>	Document providing justification for interventions to reduce liquid and dust being transported through Bacton Terminal.	<ul style="list-style-type: none"> Submitted Jan' 23 - needs case and preferred option submission. Submitted June 23 - cost submission
	<i>Bacton additional EJPs</i>	Additional Investments scopes in development to be progressed on Valves, Cathodic Protection and Electrical Assets at the site	<ul style="list-style-type: none"> Jan' 24

Appendix 2 – Table of Products and UIDs

Appendix 2: UIDs relevant to this submission											
Submission Window	Relevant EJP	New UID?	UID Code	UID Name	NARM Funding Category	Secondary Asset Class	Unit of Measure	Proposed Volumes	Proposed Cost (£m 18/19)	Comments	
January 2023 Submission	St Fergus Actuators		██████████	Process Valve Actuator Replacement	A1	46 - Process Valves	██████████	█	██████████	N/A	
			██████████	Locally Actuated Valve Actuator Replacement	A1	43 – Locally Actuated Valves	██████████	█	██████████		
			██████████	Remote Isolation Valve Actuator Replacement	A1	Process Valve Replacement	██████████	█	██████████	*This figure excludes baseline funding of ██████████.	
		New	██████████	Mass Flow Controller	A3	43 – Locally Actuated Valves	██████████	█	██████████		
	St Fergus Plant 1 Aftercooler	New	██████████	St Fergus Aftercooler Replacement	A2	02 - Aftercoolers	██████████	█	██████████	We propose use the same UID for Plant 1 and Plant 2's aftercooler despite size differences.	
	St Fergus Avon Operability	New		██████████	Air Intake Major Refurb - St Fergus 2B	A2	03 - Air Intake	██████████	█	██████████	N/A
				██████████	Cab Ventilation Major Refurb - St Fergus 2B	A2	06 - Cab Ventilation	██████████	█	██████████	N/A
				██████████	Exhaust Replacement - St Fergus 2B	A2	04 - Exhausts	██████████	█	██████████	N/A
				██████████	Cab Structure Major Refurbishment - St Fergus 2B	A2	09 - Civil Assets (Buildings/Enclosures)	██████████	█	██████████	N/A
	St Fergus Unit Decommissioning	New	██████████	St Fergus - Decommissioning of Compressor Unit	N/A	Various	██████████	█	██████████	This work is decommissioning so it is proposed to put this into the decommissioning pot against this UID.	
St Fergus Cathodic Protection		██████████	Replacement of CP system at St Fergus	A1	15 - Cathodic Protection	██████████	█	██████████	** This figure excludes baseline funding of ██████████.		
June 2023 Submission	NGT_AH2_03	St Fergus HV Transformers		██████████	Transformers Replacement	A2	16 - Electrical (Including Standby Generators)	██████████	█	██████████	
	NGT_AH2_04	St Fergus Above Ground Pipework Corrosion		██████████	Resolve CAT4 CM/4 Defects on pipework (St Fergus)	A3	32 - Above Ground Pipework	██████████	█	██████████	

Appendix 2: UIDs relevant to this submission

Submission Window	Relevant EJP	New UID?	UID Code	UID Name	NARM Funding Category	Secondary Asset Class	Unit of Measure	Proposed Volumes	Proposed Cost (£m 18/19)	Comments
			██████	Resolve CAT4 CM/4 Defects on pipework (St Fergus)	A3	32 - Above Ground Pipework	██████		██████	
			██████	Resolve CAT4 CM/4 Defects on pipework (St Fergus)	A3	32 - Above Ground Pipework	██████	█	██████	
			██████	Above Ground Pipework Patch Painting	A3	32 - Above Ground Pipework	██████	█	██████	
NGT_AH2_05	St Fergus HV Switchgear		██████	HV Switchgear Major Refurb	A2	16 - Electrical (Including Standby Generators)	██████	█	██████	
NGT_AH2_06	St Fergus Priority Valves (Phase 1)		██████	Locally Actuated Valve Replacement	A2	43 - Locally Actuated Valves	██████	█	██████	
			██████	Process Valve Replacement	A2	46 - Process Valves	██████	█	██████	
			██████	Process Valve Actuator Replacement	A1	46 - Process Valves	██████	█	██████	
NGT_AH2_07	St Fergus Plant 2 Aftercooler	New	██████	St Fergus Aftercooler Replacement	A2	02 - Aftercoolers	██████	█	██████	We propose use the same UID for Plant 1 and Plant 2's aftercooler despite size differences.
NGT_AH2_08	St Fergus Cabs Asbestos Mitigation	New	██████	St Fergus - Decommissioning of Compressor Unit	N/A	Various	██████	█	██████	This work is a mixture of decommissioning and painting. Decommissioning aspect is proposed to put this into the decommissioning pot against this UID.
			██████	St Fergus - Paint Cab to Encapsulate Asbestos	N/A	Various	██████	█	██████	
NGT_AH2_09	St Fergus LV Switchboards and MCCs		██████	LV Distribution Boards Replacement	A2	16 - Electrical (Including Standby Generators)	██████	█	██████	
NGT_AH2_10	St Fergus Distribution Boards		██████	LV Distribution Boards Replacement	A2	16 - Electrical (Including Standby Generators)	██████	█	██████	
NGT_AH2_13	Bacton Filtration Cost	New	██████	Installation of filters on Feeders at Bacton	A2	18 - Filter / Scrubbers	██████	█	██████	As these are New Additions of Assets there will be no reportable LTRB.
			██████	Installation of filters on incomers at Bacton	A2	18 - Filter / Scrubbers	██████	█	██████	
NGT_AH2_12	Overpressure Protection	New	██████	Over-Pressurisation Logic and Control Implementation	A2	32 - Above Ground Pipework	██████	█	██████	This result in no reportable LTRB due to a lack of available assets to report against

Appendix 2: UIDs relevant to this submission

Submission Window	Relevant EJP	New UID?	UID Code	UID Name	NARM Funding Category	Secondary Asset Class	Unit of Measure	Proposed Volumes	Proposed Cost (£m 18/19)	Comments
NGT_AH2_14	Compressor Cabs		██████████	Air Intake Major Refurb	A3	03 - Air Intake	██████████	█	██████████	N/A
			██████████	Exhaust Minor Refurb	A3	04 - Exhausts	██████████	█	██████████	N/A
			██████████	Exhaust Replacement	A3	04 - Exhausts	██████████	█	██████████	N/A
			██████████	Cab Structure Major Refurbishment	N/A	09 - Civil Assets (Buildings/Enclosures)	██████████	█	██████████	All Civils SACs are a volume PCD
			██████████	Air Intake Minor Refurb	A3	03 - Air Intake	██████████	█	██████████	N/A
			██████████	Air Intake Replacement	A3	03 - Air Intake	██████████	█	██████████	N/A
			██████████	Cab Ventilation Major Refurb	A3	06 - Cab Ventilation	██████████	█	██████████	N/A
			██████████	Cab Ventilation Minor Refurb	A3	06 - Cab Ventilation	██████████	█	██████████	N/A
			██████████	Cab Ventilation Replacement	A3	06 - Cab Ventilation	██████████	█	██████████	N/A
			██████████	Cab Structure Minor Refurb	N/A	09 - Civil Assets (Buildings/Enclosures)	██████████	█	██████████	N/A
			██████████	Cab Structure Replacement	N/A	09 - Civil Assets (Buildings/Enclosures)	██████████	█	██████████	N/A
			██████████	Exhaust Major Refurb	A3	04 - Exhausts	██████████	█	██████████	N/A
			██████████	Fire Suppression Major Refurb	A3	20 - Fire Suppression	██████████	█	██████████	N/A
			██████████	Fire Suppression Minor Refurb	A3	20 - Fire Suppression	██████████	█	██████████	N/A
			██████████	Fire Suppression Replacement of Electric Water Pump System	A3	20 - Fire Suppression	██████████	█	██████████	N/A
██████████	Fire Suppression Replacement of Nitrogen Bottle System (MAU)	A3	20 - Fire Suppression	██████████	█	██████████	N/A			

Appendix 3 – Jan 23 & Jun 23 Combined Request summary

License Condition / Submission Product		Submission Window	Allowance Request £m - 18/19 prices							RIIO-T3 Total	Total
			2022	2023	2024	2025	2026	RIIO-T2 Total	2027		
AHt											
	St Fergus Unit Decommissioning										
NGT_AH2_10	St Fergus Cabs Asbestos Mitigation										
NGT_AH2_14	Cabs RIIO-2 Surveys and FEED for RIIO-3										
NGT_AH2_15	Plant & Equipment RIIO-2 Surveys and FEED for RIIO-3										
NLAHOT											
NGT_AH2_14	Cabs Infrastructure & Fire Suppression Systems Yrs 1-3 Additional Request										
	Cabs Infrastructure & Fire Suppression Systems Yrs 4-5										
NARMAHOT											
	St Fergus Actuators										
	St Fergus Plant 1 Aftercooler										
	St Fergus Cathodic Protection Replacement										
	St Fergus Avon Operability and Availability										
NGT_AH2_03	St Fergus HV Transformers										
NGT_AH2_04	St Fergus Above Ground Pipework Corrosion										
NGT_AH2_05	St Fergus HV Switchgear										
NGT_AH2_06	St Fergus Priority Valves (Phase 1)										
NGT_AH2_07	St Fergus Plant 2 Aftercooler										
NGT_AH2_08	St Fergus LV Switchgear & MCCs										
NGT_AH2_09	St Fergus Distribution Boards										
NGT_AH2_12	Bacton Overpressure Protection										
NGT_AH2_13	Bacton Filtration										
AHt Total											9.687
<i>AHt Jan Total</i>											2.770
AHt June Total											6.917
NLAHOT Total											23.020
<i>NLAHOT Jan Total</i>											0
<i>NLAHOT June Total</i>											23.020
NARMAHOT Total											147.875
<i>NARMAHOT Jan Total</i>											41.835
<i>NARMAHOT June Total</i>											106.040
Grand Total June											135.978
Grand Total Cumulative											180.582

Appendix 4 - Assurance Letter

Appendix 5 – Mapping of Ofgem Requirements