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17th March 2023

RE: NGT Project Union Feasibility Phase

Dear Catherine,

We welcome the opportunity to respond to the above consultation on behalf of National Gas Transmission (NGT), and I wish to confirm that this response can be published on Ofgem's website.

Please find below our response to the specific questions raised in the consultation document.

Question 1: Do you agree with our minded-to decision to approve funding for the Project under the NZASP re-opener mechanism, and at the value proposed?

Yes, we agree with Ofgem's minded-to decision to approve funding for this project under the NZASP re-opener mechanism. We evaluated the project's eligibility for funding under various RIIO-2 mechanisms and reached similar conclusions. However, **we do not agree** with Ofgem's position to fund £5.024m of the £7.912m requested and we have provided detailed justification in this consultation response for reconsideration, but we remain committed to deliver on our proposals in this submission.

Question 2. Do you agree with our assessment of the Project's needs case?

Yes, we agree with Ofgem's assessment of Project Union's needs case which aligns with UK and EU energy strategies and will help decarbonise various sectors. The development of a UK hydrogen backbone is crucial to achieving Net Zero by 2050, and the UK government has shown support for hydrogen as a key part of its energy policy. The development of transportation infrastructure is essential for creating a competitive UK-wide hydrogen market.

Question 3. Do you agree with our assessment of the design and efficient costs of the Project's work packages?

We are pleased with Ofgem's full funding of six work packages proposed for Project Union. However, **we do not agree** with the minded to position to disallow several work packages,

which may impact the timely delivery of an operational hydrogen backbone. We believe that these work packages, including implementation strategy, market needs analysis, and hydrogen policy, are crucial to Project Union and should be fully funded. Additionally, we have also provided further justification for reconsideration of funding for commercial framework, regulations, and engineering policy work packages, which are all essential to the delivery of an operational hydrogen backbone.

Question 4. Do you agree with our minded-to decision to reduce NGT's proposed contingency costs of 7.5% to 0%?

We do not agree that contingency should be set at zero percent for this stage of a pre-FEED work package because it could affect the deliverability of the project. In our response, we highlighted several key risks associated with the project, including potential for increased scope of work and additional external services may need to be procured.

Q5. Do you agree with our minded-to decision on the company contribution level?

We **do not agree** with the mandated 10% contribution of total cost. We have proposed a reasoned and carefully considered alternative approach.

Question 6. Do you have any views on the proposed project deliverables for NGT, and whether further deliverables are required?

We agree that the project deliverables set out in the consultation are deliverable, but the dates shown are indicative and assume sufficient people resource and funding decisions are in place. We agree with the inclusion of a close-down report when the project ends.

Question 7. Do you have any views on the proposed direction for the Project contained in Appendix 2?

We welcome the proposed direction for the Project contained in Appendix 2, particularly under Parts A and C of Special Condition 3.9 and Part F of Special Condition 6.1. We understand that the direction is subject to Ofgem's statutory modification to the RIIO-2 Gas Transporters' NZASP licence conditions which takes effect on 29 March 2023.

We would like to thank Ofgem for the opportunity to feedback on this consultation and remain open to further dialogue on any of our comments. For queries in relation to our consultation response please contact francis.dike@nationalgrid.com.

Yours sincerely



Tony Nixon
Regulation Director



Project Union Feasibility Phase Consultation

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Introduction

National Gas Transmission

National Gas Transmission is the backbone of Britain's energy system today and will play a leading role in the transition to a clean energy future that works for every home and business. We own and operate the gas national transmission network, delivering energy to where it is needed in every part of the country.

We keep households warm and underpin their quality of life. For business, we fuel growth and innovation, and we are looking to the future by developing the hydrogen transmission system of tomorrow.

Project Union Net Zero Pre-Construction and Small Projects (NZASP) re-opener consultation

Project Union is a pioneering project to create a UK hydrogen backbone, largely through the repurposing of the existing methane National Transmission System, transporting 100% hydrogen, while connecting hydrogen production and storage with end users.

In our re-opener submission, we have identified priority areas of work that need to be carried out to develop the evidence base for hydrogen in the gas transmission network and to inform future policy decisions. This project will also complement a suite of projects that are currently underway to provide the evidence base to convert the gas networks over to hydrogen.

Project Union Feasibility Phase incorporates the Pre-FEED, phasing strategy and market enabling activities to ensure the integration of technical and non-technical activities. These are critical activities that need to start now to ensure we meet net zero targets and to inform upcoming net zero and hydrogen policy decisions.

We welcome Ofgem's decision to consult on Project Unions' Feasibility Phase. This response is provided by National Gas Transmission (NGT) and we confirm this consultation response can be published on Ofgem's website.

Q1. Do you agree with our minded-to decision to approve funding for the Project under the NZASP re-opener mechanism, and at the value proposed?

Yes, we agree with Ofgem's minded-to position to approve funding under the Net Zero Pre-Construction Works and Small Net Zero Projects (NZASP) Re-opener mechanism. We note that Ofgem's position is to fund £5.024m of the £7.912m requested. This excludes critical activities identified as part of Project Union Feasibility Phase. We have provided further evidence in the support of their criticality and appropriateness for this funding mechanism in Question 3.

Our submission evaluated the eligibility of the Project Union Feasibility Phase project for funding under different mechanisms of the RIIO-2 and concluded that the NZASP mechanism is the most appropriate funding route and allows Gas Transporter licensees to undertake early design, development, general pre-construction work, and Net Zero facilitation capital projects that will enable the achievement of Net Zero Carbon Targets and deliver long-term benefits to gas network users. NGT expressed its support for Ofgem's proposal to allow "pass through" style funding for such projects, which protects consumer interests and enables valuable decarbonisation projects to be taken forward during RIIO-2.

Q2. Do you agree with our assessment of the Project's needs case?

We agree with Ofgem's assessment of Project Union's needs case. Project Union will enable the decarbonisation of transport, power, industry, and heat. The development of a UK hydrogen backbone aligns with UK energy strategies as well as EU wide strategies. Through stakeholder engagement, it has highlighted the need for a hydrogen backbone and the opportunities and benefits it can bring to the UK economy.

Since our reopener submission the Climate Change Committee's (CCC) latest report¹ highlights the need for 2,800km of hydrogen pipeline by 2030 in the Central Scenario. The scale of such a hydrogen network means that decisions on infrastructure development cannot be delayed. The CCC reinforce this need that "Late hydrogen network delivery has the potential to act as a blocker to storage and production infrastructure needed to support the 2035 power system decarbonisation target"¹.

Hydrogen transport and storage infrastructure will be critical to enable the UK's hydrogen ambition, and related economic and environmental benefits

- As set out in the UK Hydrogen Strategy, low carbon hydrogen will be essential to achieving a Net Zero future, with BEIS analysis identifying 250-460TWh of hydrogen, representing 20%-35% of the UK's energy consumption could be needed by 2050.

¹ Climate Change Committee, March 2023, 'Delivering a reliable decarbonised power system'.
<https://www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system/>

- The UK Hydrogen Strategy set out a target of 5GW of production capacity by 2030, which has now been increased to 10GW by 2030 as detailed in the UK Energy Security Strategy released in April 2022.
- Government policy indicates a clear signal for hydrogen, and it is essential that this is supported with the development of transportation infrastructure to allow a resilient, liquid, competitive UK wide market to develop.
- In the transport and storage business model consultation BEIS confirm the overall need for a large, integrated, and resilient hydrogen network (supported by storage) to link multiple producers and consumers. Further, this is not contingent on the use of hydrogen in heating.
- Given the length of time required to plan for and deliver critical national infrastructure, if the UK is to achieve its Net Zero targets by 2050, there is a clear need to act now and at pace.
- The UK ambition is to decarbonise the power system by 2035. Flexible and reliable hydrogen electricity generation will have a key role in enabling this ambition, alongside a hydrogen backbone and hydrogen storage.

Q3. Do you agree with our assessment of the design and efficient costs of the Project’s work packages?

We are pleased with Ofgem’s assessment to fully fund 6 of the 13 work packages (technical delivery, supply chain, network modelling, asset management plan, construction plan and data collection). By choosing to partially fund or fully disallow the 7 remaining work packages (programme management, implementation strategy, commercial frameworks, regulation, market needs analysis, engineering policy review and hydrogen policy) there are implications to the timely delivery of an operational hydrogen backbone and the delivery of vital points of evidence in support of future policy decisions.

The work packages identified have been robustly developed to ensure both the technical and non-technical aspects are developed in parallel. We set out our response to the individual work packages Ofgem proposes to partially fund and to disallow in full.

Partially Fund

Implementation Strategy

Ofgem Proposal

Ofgem proposes to disallow £0.163m of costs relating to the ‘submission of funding request documents for FEED’ outcome within this work package, as it considers there hasn’t been a clear justification to distinguish this work package from outcomes in other work packages. For example, the ‘delivery of Hydrogen backbone pre-FEED study’, ‘development of technical and non-technical scope for FEED’ and ‘delivery of technical specification for procurement’ success metrics appear to duplicate work within the technical delivery work package; and ‘delivery of work packages for Feasibility Phase’ appears to overlap with the programme management work package.

NGT Response

As set out in chapter 6.2 of our submission, the formulation of the scope of work packages have been carried out through cross collaboration to ensure overall alignment, drive internal efficiencies and to eliminate duplication of activity.

The Implementation Strategy has three main outcomes: the phasing strategy, the funding strategy, and submission of funding request documents for FEED.

The Technical Delivery work package will deliver the hydrogen backbone pre-FEED study while the Implementation Strategy work package will inform the pre-FEED studies using the outcomes of the phasing strategy and will incorporate the outputs of the pre-FEED studies into a consolidated submission for FEED through funding via a reopener or through Government funding

Without the full funding for this work package, it leaves a gap on the resource to deliver on the outputs including;

- The ongoing development of the needs case for Project Union and the associated social-economic benefits.
- Ensuring that the outputs across the technical workstreams and wider market activities are aligned and coherent
- The development of an overall submission for FEED (which includes the technical outputs of the Pre-FEED study and an overall evaluation of the technical and non-technical outputs to recommend an optimal phasing of sections to be progressed to FEED)

Market Needs Analysis

Ofgem Proposal

Ofgem proposes to disallow costs for activities to have a “fully informed stakeholder landscape” (£0.281m) which focuses on centralised stakeholder and industry wide communications, publications and engagement around both Project Union and the broader benefits of hydrogen. Ofgem does not think it is value for money for natural gas consumers to fund communications around the potential future roles of hydrogen. Ofgem states it is not clear this work will create new evidence to feed into government thinking on the potential role of the existing gas network in relation to the future of hydrogen, nor develop evidence around how existing assets could be repurposed.

NGT Response

Gas consumers need to be aware of future decarbonisation options and without that engagement could lead to consumers making inefficient decisions.

This area will provide evidence of new sectors including the role hydrogen and in particular hydrogen transmission can play in the journey to net zero. New sectors include aviation, maritime, freight, rail.

For each sector we will investigate:

- Initial materiality assessment of potential need/impact
- Blockers and enablers to inform policy

- Decision points for each sector
- Identification of potential for Hydrogen Hubs, timings and flows

This insight will feed into the Project Union Phasing strategy as this information could impact our routing choices. We need to understand what a market outside our current direct connects could be to maximise the benefits of repurposing and minimise/drive the best value out of any new build infrastructure. In addition, there is a need to ensure that all stakeholders (including direct and indirect customers) are fully informed of the project as it progresses. This insight allows customers to develop and align their decarbonisation strategies, unlocking investment and creating certainty for shareholders and consumers.

Hydrogen Policy

Ofgem Proposal

Ofgem proposes to disallow the costs relating to evaluating, discussing, and developing new hydrogen policies (£0.066m) as it considers NGT should be engaging with this work as part of BAU.

NGT Response

We need to ensure that any policy developments take into consideration the output from the Project Union work and that the Project Union work is updated on any policy developments that may impact it. This will be crucial to the ongoing development of Project Union and the role out of a hydrogen transmission network.

Project Union will need to deliver the evidence required for policy makers to be better informed on the potential impact of future policy development and decisions. By not providing allowances relating to evaluating, discussing, and developing new hydrogen policies there is a missed opportunity to understand what policy makers require from Project Union. We need to understand the questions that policy makers have and that our scope can meet these needs. A more detailed focus is needed on the development of hydrogen policy to ensure the continued output from Project Union can provide valuable evidence to inform future hydrogen policy.

Whilst we have current resource focusing on the development of net zero policy, the increasing pace of policy develop and the need to ensure that the output from Project Union is adequately represented will require additional resources not previously foreseen.

The hydrogen policy work package request for allowances would allow dedicated resource on the interaction of Project Union and hydrogen policy, with a strong focus on developing our understanding of stakeholders' hydrogen policy needs. The interaction with stakeholders would inform our thinking on hydrogen policy developments and how best to shape these. The proposed funding arrangements will allow some dedicated time to be focused on Project Union but will provide limited opportunity to recruit valuable additional resource to fully examine the implications Project Union could and should have on future policy development.

Programme Management

Ofgem Proposal

Ofgem proposes to remove project workspace costs of £0.132m.

NGT Response

To deliver a project of this scale and size, we need a dedicated space for cross calibration. Our current location is currently optimised for RIIO-2; however, we will continue to explore our options.

Fully disallowed

Engineering Policy

Ofgem Proposal

Ofgem proposes to disallow the Engineering Policy work package as it is not clear how this work differs to other work being already done by industry and why this is needed beyond existing activities underway in this area, so Ofgem proposes to disallow the costs under this programme to avoid the duplication of work.

NGT Response

Summary:

There is a significant amount of work in addition to planned and completed progress within industry that needs to be delivered to develop a fit for purpose library of engineering policies for a hydrogen transmission network. The following section of this report details the magnitude of this work and National Gas' approach as part of Project Union to initiate delivery of this work.

The Engineering Policy workstream seeks to deliver the strategy, framework and priority for delivery of the required hydrogen transmission engineering policies. National Gas will continue to work across the industry, where appropriate to deliver these engineering policies to continue to maximise collaboration and reduce duplication of effort.

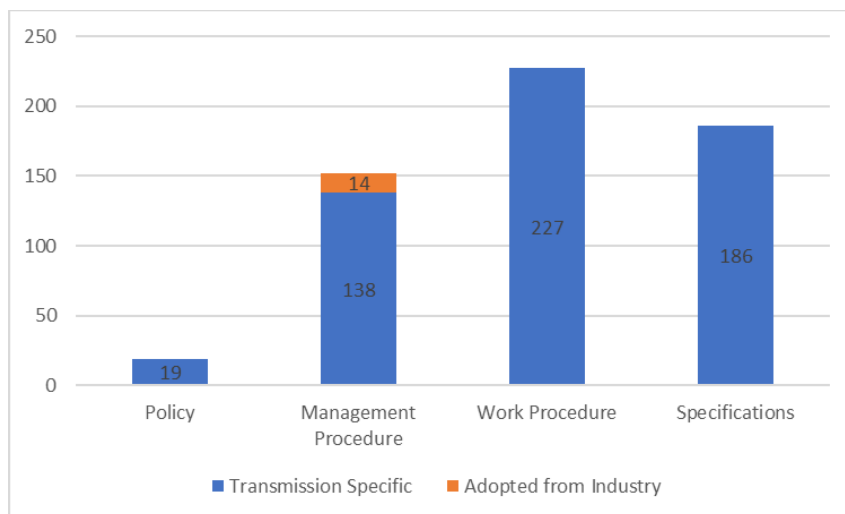
Discussion:

Engineering standards are integral to the safe design, construction, commissioning, operation and maintenance of the national transmission system. We have an established approach to the incorporation or adoption of external standards that is set out within our gas transporters safety case and within our safety management system framework policy. The approach is represented within the following image where we take an overarching feed of legislation and external standards.



In developing the Project Union reopener, we have assumed that we would follow the same approach for the development or adoption of engineering standards for hydrogen. The Engineering Policy workstream is focused on converting the existing and emerging Tier 0 hydrogen Legislation, External Standards and industry wide Tier 2 standards into a workable suite of Tier 2 hydrogen transmission policies, management procedures, technical specifications and work procedures. Throughout the Feasibility Phase of Project Union, it will deliver a clear understanding of the scope of Tier 2 documentation that will be required for a hydrogen transmission system and establish a strategy and framework to deliver the suite of documents required. It is critical that this is reviewed at this stage to support subsequent phases of system design and support a safety by design approach. For context, at the tier 2 level, NGT currently has over 550 documents at policy through to work procedure level.

NGT currently adopts key IGEM documents and works with the gas distribution networks within a technical standards forum (TSF) to develop Natural Gas Industry Standards. These adopted documents currently make-up less than 3% of NGT's tier 2 engineering policies and each includes an adoption statement to clearly define what should and should not be applied to the transmission network. This is summarised in the figure below.



Graph of the Natural Gas Transmission Engineering Policy Documents that will form a basis for the development of equivalent Hydrogen Engineering Policy Documents.

The planned work and work carried out to date to develop hydrogen specific engineering policies and supplements is listed below. The graphic also highlights where the engineering policy is related to transmission. This work covers a fraction of the anticipated work needed to deliver a workable library of engineering policies for hydrogen transmission when considering the existing natural gas transmission engineering policies.

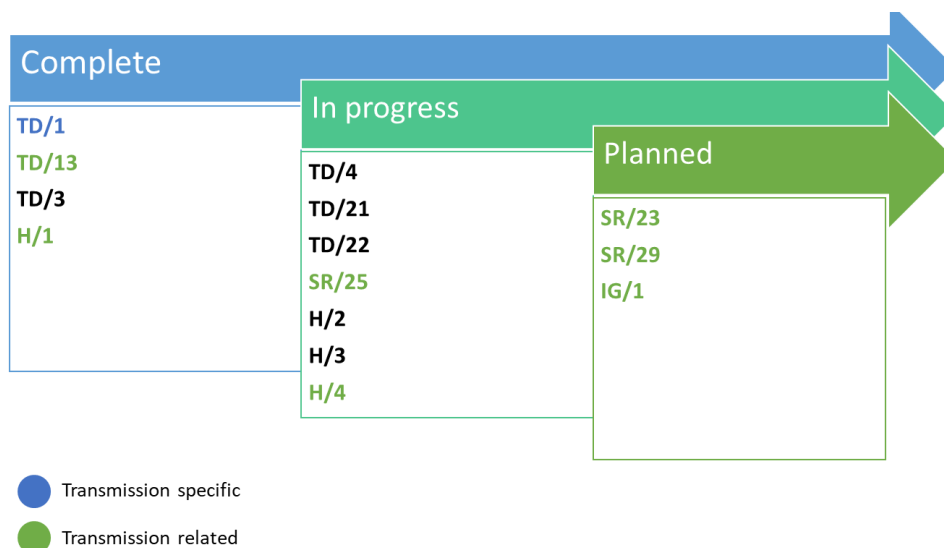


Figure summarising planned and delivered engineering policies and supplements within industry

NGT has included the engineering policy workstream within Project Union because the task to develop a hydrogen safety management system framework including engineering policies will be significant and critical to transitioning to a safely operable hydrogen network. A study was undertaken as part of NGT’s FutureGrid project to assess the impact of hydrogen on NGT’s engineering policies². The study identified that there could be 27 people years of effort required to develop an equivalent engineering policy suite for hydrogen within NGT.

Whilst we have an existing framework in place for maintaining and developing existing policies, procedures and specifications related to natural gas, this framework is set up based on the incremental modification of well-established existing standards. The process of reviewing and creating a whole new set of technical standards specific to hydrogen will be on a much larger scale to the volumes and types of document reviews that are currently delivered within NGT. In addition, the subject matter has changed to hydrogen, and will require different personnel to be involved in the review process and the associated governance. The existing structure and processes around managing this documentation has been developed over the past 40 years and therefore, this is now an ideal opportunity to re-think the ways the technical standards are structured going forward to take advantages of prior experience and future aspirations.

To achieve the proposed Project Union programme, work on engineering policy must start within the Feasibility Phase. The engineering policies will be a fundamental foundation of Project Union and will be required from project inception through the full project and asset life cycle including design, specification, procurement, build, commissioning, operation and maintenance. Due to the

² DNV Report commissioned by NGT: Assessment of impact of hydrogen on NGT policies, management procedures, standards and work procedures, July 2022.

necessarily ambitious timescales of Project Union much of the policies and standards development work needs to be delivered concurrently alongside the major deliverables described above. E.g., material specifications will need to be in place before detailed designs, specification or procurement can begin and will ultimately impact project delivery if long lead time materials are delayed. Therefore, a task is required as part of the Feasibility Phase of Project Union to understand the timescales for delivery of the engineering policies and prioritise delivery based on the project schedule and needs.

Where there are appropriate existing literature, codes, and standards (such as ASME, ISO & BS codes and standards) these will be utilised in the development of the hydrogen transmission system. However, these codes and standards are often not prescriptive in the way they are written and may highlight that something should/shall be done but not necessarily detail how this should be achieved. This will still leave a significant effort in understanding how we then apply these codes and standards to a hydrogen transmission system. This information will be assessed as part of the review to feed into the strategy for delivering a fit for purpose suite of engineering policies.

In summary, there is a significant amount of information that has been gathered by industry, however this needs to be put into a form that can be understood and used in practice. There also needs to be focus put onto what has been achieved within the industry and what knowledge gaps still exist and put in place processes for addressing these gaps to enable the development of industry wide and transmission specific technical standards. Even with the common work done amongst industry this does not negate the need for further transmission specific research to be carried out including the development of the transmission specific technical standards.

Conclusion:

- There is a significant effort required to develop a suite of technical standards specific to hydrogen transmission.
- It is critical that the correct technical standards are in place to enable the safe design, construction, commissioning, operation and maintenance of any future hydrogen transmission system.
- Whilst there is and will be harmonised technical standards within industry it is anticipated that the majority of technical standards developed for hydrogen transmission will need to be transmission specific in the same manner that it is for natural gas currently.
- Given the scale of the volume of work that is required and the implications it has for the further design and development of a fit for purpose hydrogen transmission system it is vital that we have a clear framework in place for review and delivery as well as a plan of action for delivery that enables the development of the hydrogen transmission system.

Commercial Frameworks

Ofgem Proposal

Ofgem's minded-to-decision is to disallow funding for the development of options for a commercial framework for Project Union, citing concerns about potential overlaps with the hydrogen transportation and storage business model.

NGT Response

The commercial work package will identify changes required to the existing commercial frameworks to enable Project Union.

The development of Project Union will require a commercial framework in place. We have defined the existing NTS commercial framework within seven key principles, including ensuring safe and efficient operation of the NTS, balancing gas supply and demand, enabling gas trading, ensuring gas quality, determining capacity entitlement, recovering the cost of NTS assets through charging, and enabling market participants to connect and disconnect from the NTS. These principles will need to be adapted to ensure consumer value and minimise disruption during the UK's transition to a hydrogen-based energy system.

However, there is uncertainty on how the existing gas commercial frameworks may need to evolve to accommodate the development of Project Union. We have already demonstrated the value of our work on developing a commercial framework to enable Project Union, in the undertaking of a stakeholder led Hydrogen GMaP on Project Union. This GMaP project was supported by an engaged 20+ industry working group including Government and Ofgem reps for a 12-month period, evidencing the value industry place on this key enabling activity for Project Union.

We believe that this further commercial framework activity is crucial for several reasons including:

- The hydrogen GMaP industry led project developed a range of commercial framework solution options for Project Union. An independent review through both an economic consultant in conjunction with a legal consultant would provide expert and essential review with the ultimate aim of identifying and recommending commercial framework solution options to set out a fit for purpose commercial framework for Project Union, especially focused on enabling the initial stages of network development.
- The development of commercial frameworks is a complicated and lengthy process. For example, the current industry-led change process to the existing GS(M)R was initiated in 2016 and has not yet been implemented³. Considering this case study on the commercial framework change process, it is therefore essential to generate a roadmap and identify the critical path of actions required to enable a commercial framework to be in place to support Project Union, to be ready in time for the initial stages of network development.

Our reflections on presumed business as usual activity:

We believe developing a commercial framework for Project Union goes beyond BAU activity, given the complexity involved to support specific changes for hydrogen. For example, we believe supporting specific changes for hydrogen could include a combination of developing/amending existing commercial frameworks, adding new sections to existing frameworks, and/or generating entirely new commercial frameworks.

³ <https://consultations.hse.gov.uk/hse/cd291-revision-gas-safety-management-regulations/>

In addition, it is key to note that Ofgem has recently (May 2022) granted NZASP funding for the Hydrogen Village Trial Detailed Design Studies⁴ to deliver a work package on regulatory and commercial arrangements. The proposed commercial work package for Project Union intends to undertake a similar scope of work, including examining the impacts of Project Union commercial framework solution options to the existing gas market legislative hierarchy. In summary, we believe the undertaking of this commercial work package in parallel to the technical development of Project Union as part of this reopener is critical to the timely and optimal development of a commercial framework to enable Project Union.

Regulation

Ofgem Proposal

Ofgem propose not to allow any of the costs in relation to this work package. They consider that informing development of the regulatory framework, engaging with stakeholders on this work and developing business plans for the next natural gas price control are BAU activities and they expect network companies to fund these activities through their totex allowances.

NGT Response

We have taken note of Ofgem's minded-to position to disallow the funding request for the Regulation work package. We believe that this work package is crucial to having an operational hydrogen backbone by the early 2030s and will help to identify and demonstrate compatible regulatory framework options that serve the best interests of consumers while also safeguarding the interests of natural gas and hydrogen customers. We appreciate the chance to offer more explanation and reasoning in response to Ofgem's key concerns, that both engaging with stakeholders on this work and developing business plans for the next natural gas price control are BAU activity that should be funded through our totex allowances.

RIIO-3 Planning

In reference to planning for RIIO-3, the goal is not to build the RIIO-3 plan but rather, the work being undertaken in this work package will focus on identifying the regulatory framework options necessary to enable optimisation in an integrated network of hydrogen and natural gas and unlock the potential for asset repurposing and we believe that this will be critical to progressing the work that is required beyond the end of the RIIO-2 price control period.

We have already demonstrated the value of our work through productive interactions and outputs with Government, Ofgem, and other stakeholders and we believe that the output of this work package will be crucial for several reasons;

- a) In an integrated network of hydrogen and natural gas, regulatory impacts need to be understood in order not to hinder the full benefits of repurposing, leading to delays and missed opportunities.
- b) For Project Union to have its initial hydrogen backbone in place by the early 2030s, hydrogen capital expenditure [CAPEX] must start in 2026.

⁴ Hydrogen Village Trial Detailed Design Studies and Decision: [Hydrogen Village Trial Detailed Design Studies - Decision \(ofgem.gov.uk\)](https://www.ofgem.gov.uk/hydrogen-village-trial-detailed-design-studies-decision)

- c) The current regulatory period for the natural gas network is set to end in March 2026, and preparations are already underway for the next regulatory period.
- d) Therefore, understanding these regulatory interactions is a crucial part of the planning that needs to happen well in advance to identify suitable investments and meet regulatory planning obligations.

We believe that working through the complexity of how to introduce interim arrangements that enable this, are inherently linked with the broader outputs of Project Union and would directly facilitate relevant Government Policies⁵ identified in our submission.

Our reflections on presumed business-as-usual activity

We acknowledge that informing the development of a regulatory framework is a crucial aspect of our business-as-usual (BAU) operations, and we remain committed to engaging in this activity on an ongoing basis. For instance, we participated in Ofgem’s Future System and Network Regulations Consultation (FSNR) and Net Zero Britain Policy Review.

However, we believe that creating a framework for hydrogen goes beyond BAU activity, given the vast scale and complexity involved. It may necessitate the development of an entirely new set of regulatory arrangements, even if existing arrangements for natural gas are deemed appropriate for hydrogen. We have already demonstrated considerable value in this regard through our work in the last 12 months. Still, the anticipated increase in activity over the next 12 months will require even more effort to ensure that suitable arrangements are introduced both on an interim and enduring basis.

Ofgem also indicated in the NZASP guidance that the mechanism has a broad scope and as we have previously said, we have seen where Ofgem have made attaining additional funding through the NZASP possible for the “Hydrogen Village Trial Detailed Design Studies” to develop regulatory and commercial arrangements, recognising the unique scale and requirements for hydrogen.

Interactions with Hydrogen Transportation Business Model

In the UK Government’s consultation on the Proposals for hydrogen transport and storage business models, it pointed out that to help understand the considerations, challenges, and solutions the design of a business model will need to factor in, it drew lessons from a number of case studies.

One case study that was quite pertinent, was “Hydrogen in the EU”⁶. The UK Government observed that in the EU proposed legislative changes for gas and hydrogen network regulation⁷, it acknowledged *“that to stimulate the funding needed for the new hydrogen network, cross-subsidisation may be needed in the initial stages provided it is proportional, transparent, and limited in time. This would mean some hydrogen network costs being socialised between domestic natural gas and hydrogen consumers”*

This gives the clearest indication of why we need to understand how that interaction between natural gas transmission network and hydrogen will work as soon as possible, to overcome the issues of high costs to a smaller user base by identifying options that optimises the existing natural

⁵ NGT Project Union Feasibility Phase submission, Table 2 Project Union alignment with policy (P.20)

⁶ Hydrogen transport and storage infrastructure, Page 30: [Hydrogen transport and storage infrastructure: consultation on business model designs, regulatory arrangements, strategic planning and the role of blending \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/hydrogen-transport-and-storage-infrastructure-consultation-on-business-model-designs-regulatory-arrangements-strategic-planning-and-the-role-of-blending.pdf)

⁷ The EU proposed legislative changes for gas and hydrogen network regulation (2021): [Hydrogen and decarbonised gas market package \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021L0118)

gas framework to support future Hydrogen investment in a way that keeps the cost down for users and consumers.

In summary, there is value in identifying options that are both right for consumers but also protects interests of both natural gas and hydrogen customers, most importantly to ensure fair and equitable cost allocation principles that do not unduly disadvantage natural gas consumers and this work will be supported by independent expertise to;

- Provide important evidence to continue to support the development of the Hydrogen Transportation and Storage business model including supporting the ambition to have an initial regulatory and commercial framework in place by mid 2020s.
- Evaluate which options deliver best value for money and optimum economic, societal and consumer benefits to the UK across the whole energy system and how a 'hydrogen backbone' could support opening the UK hydrogen market to the benefit of consumers.
- Establish a roadmap for optimal infrastructure planning to support the most economic and efficient energy transition
- Develop options for funding mechanisms to support future phases and implementation of a hydrogen backbone.

Q4. Do you agree with our minded-to decision to reduce NGT's proposed contingency costs of 7.5% to 0%?

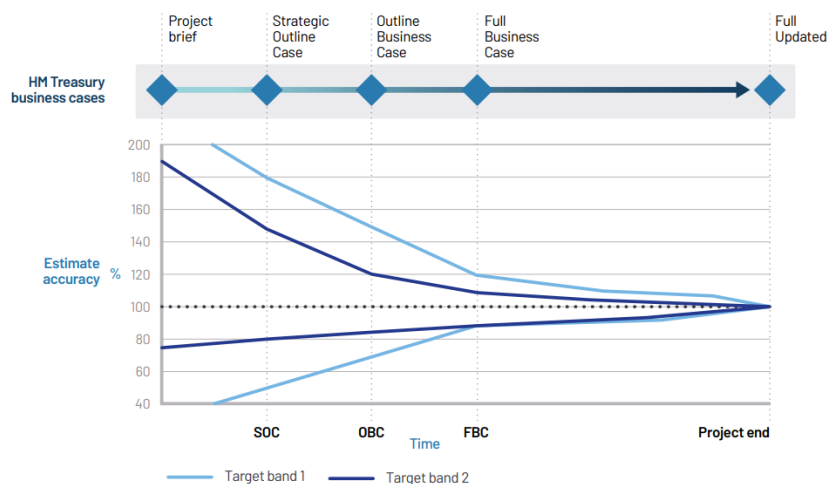
Ofgem's minded-to decision is to reduce the proposed contingency costs of 7.5% to 0%. We do not agree that contingency should be set at 0% for this stage of the project. The consequence of not providing the proposed contingency would affect the deliverability of the project.

A key risk is that our planning scenario does not reflect customer and stakeholder requirements. We have engaged and will continue to engage with customers and stakeholders throughout Project Union. However, there are some customers and stakeholders that do not have a clear view of their requirements, and also may not respond in the timescales that we are working to for Project Union. This information from our customers and stakeholders are key and therefore may change the direction of the assessments for Pre-FEED and phasing strategy. As such, to make progress we will need to make decisions based on assumptions that carry an element of risk which is factored into the contingency.

As part of the Feasibility Phase there are several external services we need to procure, we cannot develop the full scope of some of these works as there are dependencies between work packages and outputs from or wider programme of work (for example our innovation projects). Hence, there is a potential for an increase in scope for which are allowed for in the contingency. We also have not started the tender process for these activities due to uncertainty of funding, and the indicative costs are based on previous experience. There is a high demand for these services we are tendering for which will have an impact of the cost, but the extent of this impact is currently uncertain.

We have started the recruitment process for critical roles at risk which is still ongoing. In the event we cannot recruit these roles we will need to contract out the works to be able to deliver the programme of work. As such we will require contingency to full these gaps.

Taking these risks in the round we consider that a 7.5% contingency budget is reasonable, particularly when coupled with our fully assumed upward cost risk and proposed underspend return. To provide further context, we reference the Infrastructure and Projects Authority Cost Estimating Guidance⁸, which outlines the Governments’ best practice approach to the development for infrastructure projects. Considering the Feasibility Phase as a 12-month project in its own right, this NZSAP reopener submission could be considered to represent our “Full Business Case” for the Feasibility Phase, at which point the IPA Cost Estimate guidance suggests best practice cost estimate range of -7.5% to +20% (Target Band 1).



Source: Infrastructure and Projects Authority Cost Estimating Guidance

Q5. Do you agree with our minded-to decision on the company contribution level?

In response to Ofgem’s proposed funding of £5.024m (18/19 values) and direction to provide a contribution of [£558,000] (18/19 values) stipulated in section(s) 2 of “Appendix 2 – Proposed direction to NGT”, we do not agree with the direction to make a 10% contribution of [£558,000], in 18/19 prices and we have previously expressed concerns about this approach, because.

- (a) There is no guarantee of future financial benefit to NGT and therefore we remain concerned about the overall balance of future risk and reward.
- (b) Most of the costs attributed to this project are **not** innovative and therefore we do not agree with the premise that Project Union is a substantially innovative project.
- (c) The sole cost elements in our submission that may be construed as innovative are the Hydrogen Market Enabling activities, that total to around £2.403m (18/19 values). NGT's 10% contribution to these activities will amount to approximately [£240,300] (18/19 values) subject to final adjustment, depending on Ofgem's final decision on partially or fully disallowed work packages.

⁸ [IPA_Cost_Estimating_Guidance.pdf \(publishing.service.gov.uk\)](#)

The energy sector is facing significant challenges to ensure energy security, affordability of consumer bills, and the goal to reach net-zero emissions, due to recent global events. As a result, energy independence and security have become a central focus of government policies across Europe, with examples including the development of hydrogen infrastructure to interconnect Germany and Belgium by 2028⁹, the construction of a national transport network for hydrogen in the Netherlands by 2031¹⁰, and efforts to establish a European Hydrogen Backbone through projects such as H2Med involving Germany, France, Portugal, and Spain¹¹.

- Project Union will help to unlock a major opportunity for the UK to become a key player in the development of a national and regional Hydrogen economy.
- Although there is still some uncertainty about the future of hydrogen economy in the UK due to the required level of policy maturity, it is crucial to stay ahead of the saturated supply chain to repurpose the infrastructure in a timely manner.
- it is worth noting that while Ofgem has mandated NGT to make a 10% contribution to the project, no evidence has been provided to justify that such a contribution does not represent a disproportionate share of the risk.
- In the reopener submission, studies by Afry and Guidehouse demonstrated that the use of hydrogen in complementing the growth of renewables could significantly reduce overall infrastructure and system costs by £13-24bn and £38bn respectively, compared to an all-electric system and is beneficial to wider society.
- The CCC also recently published a report recommending to the Department of Energy Security and Net Zero [DESNZ] to “*fast-track the development of new business models for hydrogen transportation and storage infrastructure*”. The report emphasises the need to keep options open for larger scale hydrogen use by 2030 to achieve a reliable decarbonised power system¹².
- The latest NGESO “Bridging the Gap to net zero” report also envisages a significant role for Hydrogen’s use in electricity system balancing in the mid-2030s, in all compliant scenarios.¹³
- The overwhelming balance of evidence suggests that society stands to benefit from a Hydrogen Backbone and while we do not agree with Ofgem’s minded to decision to mandate a 10% contribution, we believe that the proposed weighting in (c) is a more appropriate level of contribution.
- Finally, and in addition to our proposals, we remain committed to:
 - Fully assuming upward cost risk relative to the proposed funding request
 - Ongoing efficiency equivalent to 3.5 % of total project costs (noting this is particularly stretching given that it is a tightly scoped, low materiality 12-month activity)

⁹ Bundesregierung. (2023, February 14). Belgian-German Joint Declaration on Bilateral Cooperation on the Transition to Sustainable Carbon Neutral Economies: www.bundesregierung.de/resource/blob/992814/2165380/e1e0bbadae155a05e5877004de7ab756/2023-02-14-dt-bel-decl-data.pdf?download=1

¹⁰ Gasunie. (2022, June 22). Gasunie starts construction of national hydrogen network in the Netherlands; www.gasunie.nl/en/news/gasunie-starts-construction-of-national-hydrogen-network-in-the-netherlands

¹¹ Élysée. (2023, January 22). French-German declaration: www.elysee.fr/en/emmanuel-macron/2023/01/22/french-german-declaration

¹² CCC Report (2023, March 9): [Delivering a reliable decarbonised power system - Climate Change Committee \(theccc.org.uk\)](http://www.theccc.org.uk/reports/2023/march-9-delivering-a-reliable-decarbonised-power-system/)

¹³ National Grid ESO. (2023, March). [Bridging the Gap to net zero - Interactive Report | National Grid ESO](http://www.nationalgrid.com/uk/energy/our-approach/bridging-the-gap-to-net-zero)

- Exclusion of project costs from totex incentivisation and regulated asset value (RAV) capitalisation and;
- Any underspend at the end of the project will be returned in full

Q6. Do you have any views on the proposed project deliverables for NGT, and whether further deliverables are required?

We agree that the project deliverables set out in the consultation are deliverable outputs, however the dates shown were indicative of the project commencing in January and an assumption that sufficient people resource and funding decisions were in place. The project is currently in a mobilisation phase, with recruitment underway and programme structures being implemented. It is expected that the project deliverables will move approximately three months from what has been listed in the consultation document, in line with the project commencing in April. We agree with Ofgem's inclusion of a close-down report when the project ends.

Q7. Do you have any views on the proposed direction for the Project contained in Appendix 2?

We broadly welcome the proposed direction under Parts A and C of Special Condition 3.9 (Net Zero Pre-construction Work and Small Net Zero Projects Re-opener) and Part F (The Distribution Networks' and NTS' Net Zero Pre-Construction Work and Small Net Zero Projects Re-opener (NZPSt)) of Special Condition 6.1 (Transportation owner pass-through items (PTt)) of NGT's Gas Transporter Licence but we do not agree with the proposed 10% contribution and we have articulated our concerns in previous questions.

In paragraph 12 of the proposed direction, it is stated that "If the Licensee fails to comply with a condition imposed by this Direction, the Authority will make use of this report in considering whether any funding should be returned to consumers, pursuant to Part A of Special Condition 3.9 of NGT's licence." We propose that the direction in Paragraph 12 should be expanded to align with NZASP guidance, version 1.2, Section 2.20, allowing for.

- (a) Under or non-delivery if the network licensee provides a well-reasoned justification
- (b) Returning of some contributions due to meeting all project conditions at a lower-than-expected cost, such as a material efficient underspend or early project termination

We recognise that Ofgem's statutory modification to the RIIO-2 Gas Transporters' NZASP licence conditions are expected to take effect by the 29 March 2023 and therefore this direction is contingent upon the entry into the force of the amended NZASP guidance.

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