Supply Chain Annex

This annex sets out the key challenges we are seeing across our supply chain. The current supply chain environment is fundamentally different to when previous price controls were set. A growing workbook from Great Britain (GB) has combined with global supply chain disruptions and increased global demand for decarbonisation, including network growth, driven by demands for a fast and equitable transition to net zero. While many of these macro forces preceded the Covid pandemic (e.g. the shift towards electrification of transport and heat), they have been further exacerbated by recent geopolitical events, such as Russia's invasion of Ukraine. There is insufficient capacity across equipment and skills, both in GB and globally, to deliver the workbook required. We are experiencing these challenges across all of our capex and they are not isolated to specific supply chains or categories of assets.

This annex sets out these key challenges in further detail and forms our shareable, non-confidential explanation referenced across our responses to Ofgem's SSMC Q&A. Further detail, which is confidential in nature due to it containing commercially sensitive information, has also been shared bi-laterally with Ofgem. We explain below some key examples of how constraints on supply chain capacity across equipment is leading to a sellers' market, which is resulting in:

- Long procurement lead times ; and
- An increasingly volatile cost environment.

This imbalance of supply and demand has resulted in a constrained market for project delivery, which creates a number of procurement and contracting challenges, including:

- Constrained supply chain workforce
- Fewer suppliers are participating in project delivery tender processes as they become more selective in the work they choose (or have capacity) to take on
- Suppliers are able to be increasingly risk averse in their contracting approach

We also set out a high-level overview of our new supply chain approaches which National Grid are adopting to respond to the new external environment. Our response to the SSMC proposes a number of targeted changes to the regulatory framework which are designed to extend the relevant principles from the Accelerated Strategic Transmission Infrastructure (ASTI) regime to the whole ET3 price control regime. This is based on the success of the ASTI regime which Ofgem introduced over the last eighteen months, which has enabled us to adopt new supply chain strategies which allow us to manage the constrained supply environment.

Insufficient supply chain capacity across equipment

Long procurement lead times

Macro, socio, economic and political factors such as post-Brexit transition border rule changes (e.g. new compliance checks), and the war in Ukraine, are driving increasing equipment delivery lead times. Some major European factories are not accepting new orders until 2026 for transformers and 2028 for HV cables, with supplier feedback suggesting that they have been overwhelmed by bulk orders from European competitors (e.g. Tennet).

Over the last two years we have seen equipment lead times double across major asset classes, with lead times now on average a minimum of two years, but in some cases up to seven years. The impact on lead times is affecting almost all of our major assets, with specific challenges in High Voltage (HV) (DC & AC) cables and offshore platform equipment, with the average time at an all-time high of ~50 weeks – up from ~30 weeks two years ago. Some European suppliers are presenting lead times that are well over 50 weeks, up to over 100 weeks in the worst case.

We are also seeing increasing lead times across Overhead Lines (OHLs) and transformers and SF6-free switchgear technology (common components of substations) becoming increasingly difficult to procure.

Increasingly volatile cost environment

As a result of the geopolitical environment, increased demand and a lack of factory slots for equipment, costs across key asset classes have been volatile and rising. There has been a stark step change, with cost increases ranging from 15% to 108% across asset categories over the last four

years. This issue is coupled with increased volatility in pricing, where prices can swing an average of +/-30% from one contract to the next.

We are seeing an increased number of suppliers only willing to keep prices valid for short periods (e.g. 4 weeks from quote) despite tender times being far in excess of validity periods. Price increases are being communicated on a 'take it or leave it' basis, with comfort that the constrained market will accept the price and allow suppliers to pass their higher input costs on to their customers.

This imbalance of supply and demand has resulted in a constrained market for project delivery

Constrained supply chain workforce

The GB supply chain workforce is constrained across a broad range of jobs, with shortages expected to worsen. Working with independent research partner Development Economics and YouGov we forecast that the energy industry needs to recruit for 400,000 jobs between now and 2050 to get the UK to net zero. These jobs represent a diverse mix of skills, from scientists and engineers, to communications professionals and data specialists.

The supply chain workforce is facing constraints due too many highly skilled staff reaching retirement age, coupled with many roles having a high time to competency. For example, Stage 1 commissioning engineers require 5-10 years training and HV cable jointers require five years of training with highly technical skillset requirements. The future pipeline is also constrained due to sector attractiveness, with less young people taking up careers across key areas and some roles (e.g. control room engineers, commissioning engineers) requiring niche skillsets.

We are seeing shortages across design and installation roles for major asset classes such as OHLs, Substations and Cabling – with shortages across many roles including design engineers, skilled project management resource and civils. Supply chain engagement and insights with suppliers tells us that Engineering, Procurement and Construction (EPCs) suppliers are unwilling to increase their skilled workforce capacity without firm commitments of work.

Fewer suppliers are participating in project delivery tender processes and more selective over the work they choose (or have capacity) to take on

Historically, the market has been demand driven with healthy competition between suppliers meaning that the vast majority of projects could be competitively tendered. Today's market is a much more constrained sellers' market. Spot and single tenders are not appealing to suppliers due to full tender processes taking time and money, with no guarantee for suppliers in ultimately securing a contract. We know that limited technical resource means that the opportunity cost of suppliers preparing tenders is high – and that in the current constrained and overwhelmed market, suppliers can afford to choose to not participate. We are increasingly seeing this behaviour.

In the last 12 months, we have seen a 57% decrease in contracts awarded via competitive tender due to suppliers not participating in tender processes – this includes awards for major projects we would historically have expected to attract the supply chain and receive multiple bids from as part of the tender process.

Suppliers are able to be increasingly risk averse in their contracting approach

Suppliers are less willing to accept previous contract terms due to increasing geopolitical risk and certainty of aggregated demand from competitors across Europe. We are being required to take on additional supply chain risk from suppliers, much of which is outside of our control, in order to secure the necessary contracts. Alongside this, there are examples of suppliers requesting larger downpayments to secure projects, which can outweigh the 20% cap on Early Construction Funding .

Mitigating actions we are taking to best manage procurement challenges resulting from the constrained supply chain

We are already actively changing our approach to procurement and contracting to respond to the supply chain environment and mitigate the risks. We accept that as part of this, we need to take on

additional risk and take actions which will enable the supply chain capacity to scale up for the increased demand. We are deploying a number of actions and strategies:

- We have implemented an enterprise supply chain model for some of the onshore ASTI projects. The model moves away from transactional and project output driven supplier relationships to build establish long term strategic relationships with partners and drive competition through long term visibility of demand so that suppliers can build up their capacity.
- Our approach for procuring materials and services across other investments will be based on long term strategies across asset categories and embed models that use portfolio allocation to drive programmes of work on a regional basis to provide long term commitments to the supply chain
- While these long-term strategies are established, we are deploying mitigation strategies to maximise the value of existing frameworks:
    - We are driving competition where possible through providing greater visibility of projects through the tender process and building competitive tension even in single-bidder situations through tender negotiations against market tested benchmarks, and challenges of time allowances.
    - We are strengthening our supplier relationships at multiple levels to drive innovation, performance management, and optimisation across the portfolio.

In our answers to the relevant SSMC questions, we provide our view of how and where the regulatory framework for RIIO-ET3 can mirror the positive changes introduced through ASTI, in terms of early need case, a programmatic approach and automatic triggering of PCF and ECF, and embed the underlying principles that have allowed us to better manage supply chain challenges, secure capacity and enter into binding commitments.