



Department for  
Energy Security  
& Net Zero

# Carbon capture and storage (CCS) Network Code

Consultation on the CCS Network Code  
Heads of Terms

Closing date: 16 February 2024

December 2023



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# Introduction

In April 2021 the UK government announced a world-leading climate change target (the Sixth Carbon Budget) to reduce emissions by 78% by 2035 compared to 1990 levels, on a pathway to net zero greenhouse gas emissions by 2050. Carbon Capture, Usage and Storage (CCUS), a technology to capture and store harmful emissions away from the atmosphere, has a key role to play in the UK's Net Zero Strategy<sup>1</sup> by helping meet these emission reduction targets.

CCUS is important for the deep decarbonisation of industries for which options are limited, such as the chemicals, refining, and cement sectors. As CCUS will also provide flexible, low carbon energy deployment across power, it has the potential to strengthen our energy security and reduce reliance on unabated fossil fuels.

The 2023 Powering up Britain Energy Security Plan<sup>2</sup> re-stated government's ambition to deliver CCUS in four industrial clusters and capture and store 20-30 mega tonnes of carbon dioxide (MtCO<sub>2</sub>) by 2030, where industrial emissions make up 6 MtCO<sub>2</sub> by 2030, increasing to 9 MtCO<sub>2</sub> by 2035.

Central to deploying CCUS is establishing the infrastructure to transport and permanently store the captured carbon dioxide (CO<sub>2</sub>). CO<sub>2</sub> Transport and Storage Networks (T&S Networks) will provide the ability for CO<sub>2</sub> emissions captured at their source to then be transported by onshore and offshore pipelines (or, potentially, non-pipeline transportation methods such as ship, road, and rail) to storage sites for the purposes of permanent containment, where the CO<sub>2</sub> is injected and stored in subsurface geological formations.

The Energy Act 2023 enables government to grant economic licences to the UK's first CO<sub>2</sub> T&S Network operators, once the cluster sequencing negotiations are complete. The licensing regime prohibits the carrying out of the activities of CO<sub>2</sub> transportation and storage unless authorised by a licence (or exempt in limited circumstances). The licence conditions are to require Transport and Storage Companies (T&S Co) to maintain and administer a network code. This Code is the focus of this consultation.

## CCS Network Code

### Overview

The Carbon Capture and Storage (CCS) Network Code ("the Code") will form a key component of the business model and regulatory regime being developed for CO<sub>2</sub> transport and storage. It gives effect to various conditions under the T&S Co's Carbon Dioxide Transport and Storage Licence ("the Licence") – in particular, the obligation to offer access to the T&S Network in accordance with the Code – and will set out the commercial, operational, and technical arrangements between T&S Co and Users, together with governance arrangements. The role of the CCS Network Code is similar to that of the gas and electricity codes that govern arrangements between different players in the gas and electricity markets respectively.

The Code will contain provisions relating to:

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<sup>1</sup> <https://www.gov.uk/government/publications/net-zero-strategy>

<sup>2</sup> <https://www.gov.uk/government/publications/powering-up-britain>

- the connection by Users to a T&S Network, or part of a T&S Network;
- the delivery of CO<sub>2</sub> by Users into the T&S Network at a Delivery Point;
- the transportation and storage of CO<sub>2</sub> delivered by Users at Delivery Points;
- the operation and maintenance of each T&S Network; and
- the interface between T&S Co in relation to different T&S Networks or parts of a T&S Network.

### A single CCS Network Code

It is intended that there will be a single CCS Network Code, rather than each T&S Network having its own network code with different terms. A single Code will allow for expedient development and could facilitate growth (as it is possible that some clusters may be interconnected in the future). A T&S Co's Licence will specify which network code version shall apply to that network; the default position is that the single "uniform" Code will apply across all T&S Networks, other than in exceptional circumstances.

### Initial Code

Drafting of the Code is being guided by government and driven by industry. Through engagement with industry and advisors, government officials have sought to integrate diverse viewpoints and expertise to develop a fit for purpose Code which meets the needs of varied stakeholders.

The immediate intention is to produce a form of Code sufficient to support the deployment of the Track-1 T&S Co and Users (the "Initial Code"). Accordingly, government and industry are targeting simplicity where possible in the development of the Initial Code, seeking to include those elements required by early networks and establish a framework that meets future needs whilst deferring development of other features until more has been learnt from initial operations.

### Structure and key updates

Government is seeking to maximise consistency across T&S Networks but recognises that technical/operational differences between T&S Networks may exist, and that some requirements may be specific to particular Users. Accordingly, the Code will contain:

- Uniform provisions – the main body of the Code sets out uniform provisions intended to apply consistently across all T&S Networks.
- Network-specific provisions – provisions which cannot be included in the uniform provisions because they are specific to a T&S Network or part of a T&S Network will be included in the Annexures to the Code; and
- User-specific provisions – each User will enter into a Construction Agreement and a Connection Agreement, based on templates included in the Code, but which will include some User details and provisions specific to that particular User.

Draft Heads of Terms (HoTs) for the Code were published in June 2022 and December 2022. Since that publication, there are a number of areas that have been further developed. In particular, recent work has focused on updating provisions related to governance, new and

modified connections, Capacity Constraints, Nominations, CO<sub>2</sub> re-use, metering requirements, Industrial Procedures, liability, security and data.

The indicative HoTs dated December 2023 (published alongside this document) set out the current proposals on the matters to be addressed in the Code. They remain subject to ongoing development in conjunction with the development of all other relevant components of the CCUS programme.

# General information

## Why we are consulting

The purpose of this consultation is to seek views on the proposed CCS Network Code Heads of Terms to inform drafting of the detailed (full form) version.

The Code will form a key component of the regulatory regime being developed for the CCUS sector, as T&S Co and Users of the T&S Network will be required to comply with the Code.

## Consultation details

**Issued:** 1 December 2023

**Respond by:** 16 February 2024

**Enquiries to:**

CCS Network Code Team  
Department for Energy Security and Net Zero  
6th Floor  
3-8 Whitehall Place  
London  
SW1A 2AW

Email: [codes.engagement@energysecurity.gov.uk](mailto:codes.engagement@energysecurity.gov.uk)

**Consultation reference:** Transport and Storage CCS Network Code

**Audiences:**

The government anticipates that this consultation will be of interest to any persons, groups or organisation with an interest in the development of CCUS policy, Net Zero or the energy sector. This may include:

- Devolved administrations and local governments
- Investors and developers involved in potential CCUS projects
- The industrial and energy sectors more widely
- NGOs and other organisations with an interest in climate and energy

However, any organisation or individual is welcome to respond.

Track-1 delivery partners are requested to submit feedback jointly with their cluster. Each cluster should develop and agree a single shared response, indicating where consensus exists, and where necessary, suggesting ways to achieve consensus where it does not exist. This is with a view to setting the Heads of Terms on a timeline compatible with planned Track-1 cluster Financial Investment Decision dates.



### **Territorial extent:**

The economic licencing requirement under the Energy Act 2023 covers the pipeline transport and geological storage of CO<sub>2</sub> onshore across the UK and offshore in UK territorial waters and offshore waters in a “Gas Importation and Storage Zone”. Through the Licence, all T&S Co will be required to maintain and administer a network code. As stated above, the ambition is that the single Code applies across all networks. The provisions outlined in the CCS Network Code are therefore intended to apply to licensed T&S Networks across England, Wales, Scotland and Northern Ireland. This consultation is relevant UK-wide.

## How to respond

A response form is available on the GOV.UK consultation page:

<https://www.gov.uk/government/consultations/carbon-capture-and-storage-ccs-network-code-updated-heads-of-terms>

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

When responding, please state whether you are responding as an individual or representing the views of an organisation.

**Email to:** [codes.engagement@energysecurity.gov.uk](mailto:codes.engagement@energysecurity.gov.uk)

### **Write to:**

CCS Network Code Team  
Department for Energy Security and Net Zero  
6th Floor  
3-8 Whitehall Place  
London  
SW1A 2AW

## Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

DESNZ will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

DESNZ intends to summarise all responses and publish this summary on [GOV.UK](#). The summary will include a list of names or organisations that responded, but not people’s personal names, addresses or other contact details.

## Quality assurance

This consultation has been carried out in accordance with the government's [consultation principles](#).

If you have any complaints about the way this consultation has been conducted, please email: [bru@energysecurity.gov.uk](mailto:bru@energysecurity.gov.uk).

# The Proposals

## Section A: Introduction, Structure and Interpretation

Section A sets out the structure of the Code, how the Code is given legal effect and how the Parties accede to the Code. For the purposes of the Code, a “Party” means a T&S Co or a User. In the context of Ancillary Agreements, references to “Parties” are the T&S Co or User who is party to that agreement. Section A defines a T&S Co and User as follows:

- “T&S Co” means, in relation to each T&S Network or part of a T&S Network, the entity that is the holder of a Licence authorising it to operate that T&S Network or part of a T&S Network; and
- “User” means a person other than T&S Co who is bound by the provisions of this Code and delivers CO<sub>2</sub> into the T&S Network at a Delivery Point.

A key point to note here is that the first T&S Co(s) and Users to reach Financial Investment Decision (FID) will sign the Code Agreement, while subsequent T&S Co and Users will accede to the Code Agreement (and thereby become Parties to the Code) by signing the Code Accession Agreement. The Code Accession Agreement and the Code Agreement HoTs are set out in Exhibit D of the Code HoTs.

As described above, most provisions will apply to all T&S Networks, and are as such, referred to as the “Uniform Provisions”. However, there are also some T&S Network-specific provisions, such as the CO<sub>2</sub> specifications that Users must comply with, and such provisions are referred to as the “Specific Provisions”.

## Section B: Governance

Section B of the Code presents a common set of modification and governance processes for the Code. The basis of the Code’s governance framework has been designed taking into account the governance processes of other industry codes whilst also appreciating the specific context and nascency of the CCUS sector.<sup>3</sup>

### Administration

Under the Licence, Licensees will be obligated to administer the Code. It is intended that arrangements for the administration of the Code modification procedure be simpler than those applying in the gas and electricity code context, to reflect the nascent and smaller scale nature of T&S Networks. In particular, rather than requiring a Code Administrator, the Code assigns the administrative responsibilities to an independent and impartial Secretary, who will be selected and funded by the Licensees jointly.

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<sup>3</sup> Our proposed design of the CCS Network Code governance framework acknowledges the CCS Network Code will not, at least initially, fall under the scope of the Code Governance Reforms introduced in the Energy Act 2023.

## Modification Panel

The T&S Licence also requires the Licensees to operate the procedures for the modification of the Code. An aspect of this requirement is to establish a Modification Panel (“the Panel”).

The Panel will comprise of a Panel Chairperson, six (6) T&S Co representatives, six (6) User representatives, an Ofgem representative and a Secretary of State (SoS) representative. The T&S Co and User representatives would be voting members, whilst the Ofgem and the SoS representative would be non-voting members.<sup>4</sup> The Panel will only diverge from these arrangements should the number of User Types exceed six (6), where then the Panel will increase in accordance with the number of User Types in order to provide representation to those stakeholder groups impacted by modifications to the Code. The definition of what the initial group of User Types are, will be based on the sectors that are expected to be part of the initial two clusters as per the Track-1 project shortlist announcement in March 2023.<sup>5</sup> It is anticipated that the list and definitions of further User Types will be updated through the modification process outlined in the Code.

The Code allows for representatives of the Panel to be selected for two (2) year terms. It is acknowledged that in the infancy of the Panel, there will likely be a staggered accession to the Code from both T&S Co and Users; there will not initially be six (6) individual Users and six (6) individual T&S Co. As a result, the Code provides that multiple seats can be held by one Party, in order that all seats are filled. The Code also sets out arrangements whereby T&S Co and Users who accede to the Code after its implementation date, can replace (inside the two (2) year term) an incumbent T&S Co or User which holds multiple seats, as the case may be.

## Modification process

Code Parties, such as T&S Co and Users, are able to raise a Modification Proposal that better facilitates the relevant objectives of the Code to the Panel.<sup>6</sup> A Modification Proposal will then go through a robust industry led modification process culminating in Ofgem or the Panel (in more limited circumstances), as the case may be, making a determination on whether the modification should be implemented.

Further to Code Parties being able to propose modifications, the T&S Licence and the Code also allows Ofgem to raise a Modification Proposal in respect of the Code or to direct a Licensee to raise a Modification Proposal through a Significant Code Review process. In addition to this, Ofgem will be able to raise an Urgent Modification Proposal to the Code as required, because the nascency of the CCUS sector may necessitate such expedient action from the regulator.

In addition to this, the Code will also allow for Third Party Participants (e.g. a prospective User or T&S Co), who have been designated by Ofgem, to raise Modification Proposals. Modifications to the Code are expected, in particular, as the CCUS sector evolves with new network designs and market participants. It is important that the Code is able to react to these changes in a timely manner. Allowing Ofgem or designated Third Party Participants to propose modifications will help enable the strategic development of the sector.

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<sup>4</sup> The only exception being where Ofgem elects to exercise a casting vote where there is an equal number of votes by Voting Members for and against a matter.

<sup>5</sup> [Cluster sequencing Phase-2: Track-1 project negotiation list, March 2023 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/cluster-sequencing-phase-2-track-1-project-negotiation-list-march-2023)

<sup>6</sup> As set out in the T&S Licence.

Given the nascency of the CCUS sector, it could occasionally be appropriate for the SoS to take a role in Code modification, particularly during the early years of the industry. Therefore, consistent with a note in the December 2022 HoTs for the Code, the updated HoTs now include (i) a formal role for the SoS as a non-voting member on the Modification Panel, (ii) a requirement that the SoS is consulted on modifications, and (iii) a specific and timebound role for the SoS to direct modifications during the Interim Period<sup>7</sup> (as defined in the Energy Act 2023), by mirroring the process which already applies to Ofgem with respect to Significant Code Reviews. These provisions seek to enable timely and efficient modification of the Code to respond to learnings from early networks and allow for new types of networks, such as those involving non-pipeline transport or separate onshore and offshore licences. This will ensure the Code remains responsive to the needs of future T&S Co and Users so that expansion and diversification of networks is facilitated.

The department continues to consider whether it would be appropriate to introduce a power in future primary legislation for the Secretary of State to direct modifications to the Code. This includes consideration of whether any such power would be time-bound or enduring. Furthermore, primary legislation could enable CCS Network Code governance arrangements to be modified in future, aligning them with those of other industry codes, which are currently subject to revision.

### Disputes

The Code requires that Parties take all reasonable steps to avoid or minimise the scope for disputes but where this is not possible the Code sets out the procedures that are to be followed which include Expert Determination in some cases, as well as mediation.

Some decisions of Ofgem with respect to other industry code modifications are appealable to the Competition and Markets Authority (CMA) under the Energy Act 2004. This appeal mechanism does not apply to the CCS Network Code, however, Ofgem's decisions in relation to CCS Network Code modifications could be subject to challenge by means of a judicial review, in the same way other decisions of government bodies and regulators may be subject to judicial review.

See Section C below, for further information in respect of connection disputes.

### Question

- 1. Do you agree with the approach to Code governance as set out in the Heads of Terms?**

## Section C: Connections

Section C sets out the process to connect to a T&S Network that is intended to apply until the government ceases to play an active role in the Selection Process for new connections and allocation of capacity, or until a new connection process is developed under the Code.

Section C acknowledges that there are some Users (referred to as the "Initial Users") who have already been selected to connect to the Track-1 T&S Networks and are currently

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<sup>7</sup> The "Interim Period", as per Schedule 1 of the Energy Act 2023, is the period during which the SoS has the power to grant economic licences to T&S Network operators. The Interim Period will begin when Schedule 1 comes into force and end with whatever day the SoS specifies by regulations.

engaging with the T&S Co towards FID and signing Construction and Connection Agreements. Therefore, Section C acknowledges that the connection process set out in Section C (other than the dispute resolution process) does not apply to these Initial Users. Section C also acknowledges that applications can be made to a Prospective T&S Co, ahead of them formally acceding to the Code, in accordance with the provisions of the Code Agreement, upon being granted a Licence to transport and store CO<sub>2</sub>.

### Concept of Eligible Applicants

Section C introduces the concept of “Eligible Applicants”, identified through a UK government led Selection Process. If a prospective User or User becomes an Eligible Applicant, it can then seek a new or modified connection under the provisions of Section C.

The fact that the concept of Eligible Applicant is tied to a government led Selection Process recognises that in the nascent stages of the CCUS industry, when T&S Co and most Users benefit from revenue support, it is appropriate for government to be involved in the selection of prospective Users (and the allocation of additional capacity to existing Users). This is not just because public resources may be involved, but also because T&S Network capacity may be constrained and trade-off decisions will need to be made by government.

It is envisaged that any project which seeks to rely on any form of UK government support, for a new or modified connection, will need to apply via a UK government led Selection Process, to become selected and confirmed as eligible to make a connection application to T&S Co under Section C. This is not assumed to preclude an application into a Selection Process by a project not requiring UK government support. It is contemplated that in the future the connection application process will more closely resemble the connection process that exists in the context of connections to gas and electricity networks – that is, a connection process without a government led Selection Process being the first step, and instead involving a direct approach to T&S Co. Any such new connection process will be implemented by way of a formal modification of the Code under Section B.

The proposed approach is considered consistent with government ambition that the Initial Code provides sufficient clarity for early T&S Networks, whilst establishing an architecture that can meet the needs of future T&S Networks. It is acknowledged that government policy on new connections continues to evolve, and that details of the next phases of the current CCUS Cluster Sequencing Process are still to be set out. For this reason, Section C does not expressly refer to the current CCUS Cluster Sequencing Process, reinforcing that the provisions are intended to function under a range of possible policy futures, and to potentially accommodate projects that do not require UK government support.

### Process for new connections and modified connections

Building on the above concept, a prospective User or User that wishes to (i) gain access to a T&S Network at a new (as yet unbuilt Delivery Point) and/or (ii) wishes to modify an existing Delivery Point, and has been selected via a government led Selection Process (as an Eligible Applicant), shall complete and submit to T&S Co an application (the Connection Application) and comply with the terms of it. Where the Connection Application relates to a new Delivery Point, it shall specify: the nature and location of the User Facility, proposed size and location of Delivery Point, the date when the Eligible Applicant proposed to start using the Delivery Point, the quantity of Network Capacity provisionally allocated, and any other information T&S Co may reasonably require. The Connection Application must also be accompanied by evidence that the Eligible Applicant has been selected and copies of any documents/information relating to the proposed connection or modification of an existing Delivery Point. Within three months of

the application, T&S Co will either advise the Eligible Applicant that the Connection Application has been rejected, or issue an Initial Offer which will include a draft Construction Agreement (including the draft Construction Programme and draft Commissioning Programme), and a draft Connection Agreement and Code Accession Agreement.

Following the acceptance of an Initial Offer, T&S Co will issue a Connection Offer which will include final copies of the draft documents issued with the Initial Offer.

It is contemplated that that the applicant will sign the Connection Offer and commit to entering into the Construction Agreement, Connection Agreement and Code Accession Agreement, subject only to any conditions precedent to FID.

### Connection disputes

Where a dispute arises between a prospective User or User and T&S Co in relation to a Connection Application, the directors, or other senior representatives of the Parties with authority will attempt to resolve the dispute. If the dispute cannot be resolved within 10 business days of the request, then the Parties will refer the dispute to mediation in accordance with the mediation procedure set out in paragraph 10 Section B of the Code.

It is recognised that if the Parties are unable to resolve their connection dispute in accordance with the Code, the prospective User or User has the right to make an application for access to the Secretary of State (or the Scottish Ministers/the NI Department for the Economy, as applicable) pursuant to the Storage of Carbon Dioxide (Access to Infrastructure) Regulations 2011 or the Storage of Carbon Dioxide (Access to Infrastructure) Regulations (Northern Ireland) 2015, as the case may be (together referred to as the "AIR"). The AIR pre-date the current CCUS programme and were a part of a wider regulatory framework developed to:

- implement the provisions of the EU CCS Directive (Directive 2009/31/EC); and
- in the case of the 2011 AIR, facilitate an earlier CCS Demonstration Programme.

As such, the AIR were not designed to govern third-party access within a regulated model, such as is currently being developed for T&S Networks. For this reason, the government is planning to review the AIR in 2024 in consultation with the devolved authorities and may enact Regulations (pursuant to a power under the Energy Act 2023) to revoke or amend the AIR. Until this happens, the AIR will continue to apply alongside the ERR, and are therefore expressly referenced in Section C.

### Question

- 2. Do you agree that the approach set out affords appropriate pathways for Users and prospective Users to obtain a new or modified connection, either with or without UK government support being sought?**

## Section D: Network Structure and Planning

### Network classification

Each T&S Network is made up of the Onshore Transportation System and the Offshore Transportation and Storage System, with the latter being made up of the Offshore Pipeline Infrastructure and the Storage Complex. Section K defines these terms as follows:

- **The Onshore Transportation System** means that part of the T&S Network which is located onshore, including the pipelines and related infrastructure from the emitter(s) boundary fence to the pipeline entry pig trap at the entry to the Terminal, but excluding any part of the T&S Network which constitutes the Offshore Transportation and Storage System.
- **The Offshore Transportation and Storage System** means the Offshore Pipeline Infrastructure and any Storage Complex.
- **The Offshore Pipeline Infrastructure** means that part of the T&S Network which is offshore, including the pipelines and related infrastructure from the pig trap at the Onshore Transportation System to the pig trap at the inlet to the Storage Complex, but excluding the Storage Complex and including the Terminal.
- **The Storage Complex** has the meaning given to it in regulations in respect of the storage of carbon dioxide under the Energy Act 2008.

The distinction between onshore and offshore infrastructure is particularly relevant in the context of use of system charging. Whilst the boundary between the onshore and offshore systems is defined with reference to the pig trap, specific definitions for what constitutes an Onshore User and an Offshore User are given in Section K. See Section H of this document for further discussion.

### Network planning

Under the Code, Users are required to provide various forecasts, both shorter and longer term, for various purposes: for operational planning and scheduling maintenance (Section E), for the purposes of calculating Charges (Section H) and for longer-term planning, including for expansion of the network (Section D). The forecast required to be provided under Section D is a long-term forecast (20 years) as it is designed for long-term planning purposes. While these forecasts will not be binding, in order for T&S Co to be able to make future development decisions based on accurate information, Users are expected to use reasonable endeavours to provide accurate forecasts.

### Interface between onshore system and offshore system

Recognising that in future, it is possible that onshore and offshore components of the T&S Network may be separately licensed and under separate ownership and control, the Code includes a placeholder for provisions dealing with the interface between the onshore system and the offshore system, and the overall operation of the whole T&S system. It is envisaged that these provisions would be introduced after the Code has been implemented, as and when required, via formal Code modification.

### Question

3. Do you agree with the proposals set out in Section D?

## Section E: Network Use and Capacity

Section E provides for the use of system procedures and provides for how Users access the network operated by the T&S Co. This section of the Code specifically identifies and explains the allocation of network capacity, the capacity nomination process, capacity constraints and



maintenance procedures. Together, these provisions regulate how both a User and operator of the system will act to ensure that the T&S Network operates in an economic and efficient manner.

### Network use

T&S Co will be ultimately responsible for managing all aspects of the operations of the T&S Network, from a User's Delivery Point to the store. As operator, T&S Co is required to provide an Obligated Network Capacity (ONC) which is the maximum amount of capacity T&S Co can make available for network Users based on the system design and parameters at various decision points, as determined pursuant to T&S Co's Licence. This ONC will provide a metric of the total capacity available on the network against which Users can apply for and be allocated as their "Registered Capacity".

### Registered Capacity

In order for T&S Network Users to secure access to the network, they will be required to acquire Registered Capacity which provides a right, but not obligation to flow CO<sub>2</sub><sup>8</sup> up to a defined maximum rate, which is defined in tonnes of CO<sub>2</sub> per hour (tCO<sub>2</sub>/hr), onto the network through a certain Delivery Point.

A core risk allocation feature of the Code is to enable all Users to flow up to their maximum instantaneous flow concurrently, irrespective of what they have flowed to date and independently of the past and current activity of other Users. To this end, the Code assumes that a User's Registered Capacity is equal to the maximum flow expected under its plant design<sup>9</sup>. However, a key trade-off with this approach is that underutilisation of the network may occur relative to the annual volume cap under a Storage Permit; Users are effectively given the right to flow continuously at 100% of Registered Capacity, despite this being unviable.

An alternative approach could see aggregate Registered Capacity made available, that was greater than ONC, to reflect the factoring in of network under-utilisation where it is expected to occur (e.g. due to variation in User flow processes, presence of dispatchable Users, and/or planned/unplanned network constraint events). For the initial Code, this approach was assumed overly complex, despite the potential benefits that higher network utilisation offers (e.g. in respect of T&S charges, mutualisation and stored volumes/value for money). The extent to which it would be appropriate to factor in under-utilisation would vary by network. The respective needs and obligations of T&S Co and Users would require balancing. However, this approach may be seen as desirable by Users and T&S Co, especially in considering when and by how much to expand the amount of Registered Capacity available, whilst providing certainty to Users and ahead of more complex interruptible capacity products being available.

The initial Code only offers long term capacity products - capacity contracts of between 1 and 15 years duration. This limited product range reduces complexity and encourages predictability on nascent networks. The expectation is that in future, data backed decisions to introduce more intricate and flexible capacity products, similar to those seen in other network-based systems, will evolve to suit the needs of the Users and T&S Co.

The Code provides for how capacity will be allocated, recorded and amended (including surrendered). A User may request to amend its Registered Capacity (either surrender or

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<sup>8</sup> CO<sub>2</sub> refers to CO<sub>2</sub> Rich Stream, i.e. the total flow of CO<sub>2</sub> plus any additional particulates that enters the network.

<sup>9</sup> i.e. a User's Registered Capacity in tCO<sub>2</sub>/h will be the maximum their system will be able to physically flow onto the network.

increase) via a government-led Selection Process. This recognises that currently, decisions on both selection of Users and capacity allocation are made by government (to date, as part of the CCUS Cluster Sequencing Process). During this period, surrender of Registered Capacity will only be accepted if there is another User seeking expansion; otherwise the User requesting to surrender will maintain their original Registered Capacity and the payment obligations. Any increase in capacity will be registered for the remainder of the capacity contract held by that User, to prevent frequent fluctuations in Registered Capacity bookings. This approach strikes a balance between providing initial flexibility to Users to adjust Registered Capacity whilst providing revenue security for T&S Co as operator of the network.

Section E provides a place holder for details of the financial security required from Users to secure liabilities in relation to long-term network capacity. A drafting note confirms that this is set to zero and acknowledges that (i) in future this may not be the case and (ii) other financial security is still required under Section H.

More information about the nature of this capacity liability is given under Section J. Whilst the security requirement against this liability for Initial Users connecting to the network has been set at £0, this does not affect the post-termination liability, which remains a legal obligation for Users under the Code. The decision to set this requirement at £0 is based on the following:

- Users may seek to transfer the cost of such security to government.
- T&S Co's rights to recover its Allowed Revenue are supported through the Revenue Support Agreement, should a User not make full payment of its post-termination liability (for example, if the User is insolvent).
- In the event of a User defaulting under this obligation, other Users on the network are protected by the mutualisation cap (discussed in the context of Section H, later in this consultation), which limits the amount by which a User's T&S fees can increase.

Separately, there is also a requirement on Users to provide security (as detailed in Section H) in relation to payment liabilities (as detailed in Section J). The intention for this differentiation on financial securities is to provide for the rights of the T&S Co in relation to Late Payments made by Users, distinct from any consideration of liabilities stemming from capacity.

### Questions

- 4. Do you agree with the proposed approach to Registered Capacity?**
- 5. Would an approach that allowed aggregate Registered Capacity to be greater than Obligated Network Capacity be beneficial, and would the associated risk be manageable for early projects?**

### Nominations

In addition to holding the right to flow CO<sub>2</sub> onto the network through Registered Capacity, a User will be required to submit hourly Nominations in order to flow CO<sub>2</sub> onto the network. This is common practice in similar networks (gas networks in particular) and provides vital information to T&S Co to operate, balance and accommodate all CO<sub>2</sub> entering the network from its Users.

The Code requires Users to provide a funnel-based forecasting approach, with annual forecasts being followed and updated by rolling quarterly, monthly, weekly, and then Daily

Nominations<sup>10</sup> with the latter being a formal intent to flow, which the User will have an obligation to seek to achieve. The forecasts are intended to provide a representation of a User's expected flow to the T&S Co, for which accuracy increases with proximity to the injection time. These practices have been put in place to ensure as far as reasonably practicable, Users are able to use the network how they require, and equivalently, T&S Co are able to respond and service the demand of their Users.

Acknowledging that CO<sub>2</sub> is a waste by-product of a User's primary operations, and that factors such as a User's demand profile or feedstock composition could affect CO<sub>2</sub> output even after day-ahead Nominations had been confirmed by a T&S Co, a Renomination procedure is proposed. Under this process, where after the set Confirmation Close Time (the day ahead), Users will be able to renominate for any hour in the following day (or day of, as that day comes into effect) to provide T&S Co with an updated intent to flow.

The Network Code does not include a mechanism for Users to nominate or flow above their Registered Capacity; such a mechanism is not required under the existing risk allocation approach. User feedback to date has endorsed the approach.

### Mechanisms to incentivise engaged and accurate Nominations

The Code and wider Licence have mechanisms in place to incentivise good use of system practices. In particular, T&S Co will be required pursuant to its Licence to operate the T&S Network in an economic, efficient, effective and co-ordinated manner, and conduct its business in a manner best calculated to ensure no User obtains any commercial advantage. Where relevant, the Code also requires T&S Co to act as a "Reasonable and Prudent Operator". Similarly, Users are also subject to various obligations designed to ensure the T&S Network can be operated in an effective manner. In the context of the nomination regime, Users will be required to use reasonable endeavours to comply with their "Final Confirmed Nominated Quantity" – i.e. the final nominated and confirmed quantity of CO<sub>2</sub>.

It is recognised that efficient operation of a User demand led network will require proactive and accurate Nominations by Users. Therefore, a mechanism is proposed to promote this, by assessing a User's performance against its Nominations. The mechanism would operate on a daily basis. If the amount of CO<sub>2</sub> delivered by the User "materially" or "persistently" deviated from the Final Confirmed Nominated Quantity by greater than defined threshold levels, a "Nominations Non-conformity Notice" could be issued as a first step, requiring the User to desist from failing to comply and granting a grace period.

The calibration of the thresholds for "material" or "persistent" deviation are still under consideration. The intent is that these should be set so that a prudently operating User, that actively engages with the nomination processes, is able to avoid triggering the warning notices. However, if a User has received two Nominations Non-conformity Notices within the preceding 12 month period, in the event of another non-conformity, a T&S Co may serve a "Non-Delivery Notice" requiring the User to cease delivery of CO<sub>2</sub> within 24 hours, until the User reasonably satisfies the T&S Co that it will cease to Materially or Persistently breach the tolerances. If the User cannot remedy the issue within 14 days, the T&S Co may issue a Default Notice to the User, as set out in Section J.

This mechanism is preferred to a scheduling charge type approach (i.e. an additional charge on out of tolerance flows whether hourly or daily) due to the cost uncertainty it could introduce

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<sup>10</sup> Daily Nominations will provide an hour-by-hour flow profile to T&S Co that the User will be obligated to flow CO<sub>2</sub> onto the network in line with.

for Users and recognising that a User's CO<sub>2</sub> output may fluctuate as a function of their primary activity.

### Questions

- 6. Do you agree that the proposed approach to Nominations and Renominations will support efficient and responsive operation of a cluster, balancing the needs of both Users and T&S Co?**
- 7. Do you have any information or evidence that would support calibration of the "material" and "persistent" thresholds used to assess deviation between actual flows and Nominations?**

### Capacity Constraints

The T&S Co will be incentivised to minimise constraints on the T&S Network via an "availability incentive" within its Licence. In summary, this availability incentive would adjust a T&S Co's Allowed Revenue upwards or downwards by a pre-determined amount for each unit of availability above or below an Availability Target.

A pro rata mechanism has been developed as a fair and equitable default mechanism to manage allocation of Available Capacity during constraints (planned or unplanned). This involves all Users affected by the constraint receiving a portion of Available Capacity with respect to their Registered Capacity.

The amount of Available Capacity which each User is allocated will be calculated using the following formula:

$$\text{User A's allocation} = \frac{\text{Available capacity}}{\sum \text{Affected users' Registered Capacity}} \times \text{User A's Registered Capacity}$$

The basic pro rata proposal will be the default approach to managing Available Capacity during constraints, however a more flexible approach, based on certain 'Constrained Capacity Optimisation Principles' set out in the Code, will apply in the following circumstances:

- Where an emergency occurs (which leads to the activation of the Emergency Core Procedure) then T&S Co will have discretion to manage the emergency and any resulting Capacity Constraints until the emergency is resolved (at which point pro rating becomes the default position, and T&S Co will be obliged to implement pro rata as soon as is practicable);
- An unplanned constraint arises and T&S Co deems that pro rating will jeopardise the safety and integrity of the network. In these circumstances, similarly to cases involving an emergency, T&S Co will have flexibility to manage Available Capacity according to the principles referred to above, and is obliged to transition to pro rata as soon as is practicable; and,
- Following the implementation of pro rata, if there is unused Available Capacity (e.g because a User is unable to utilise the reduced Registered Capacity allocated to it) T&S Co, in communication with Users, will allocate that unused Available Capacity according to the principles referred to above.

It is relevant to note in this context that T&S Co is required, in accordance with the conditions of its Licence, to act in a non-discriminatory manner and this overriding obligation will apply to the way T&S Co responds to constraints in accordance with the Code.

### Question

- 8. Do you agree with the pro rata approach being a fair and equitable default mechanism to manage constraints within the network (noting the exceptions listed above)?**

### Maintenance

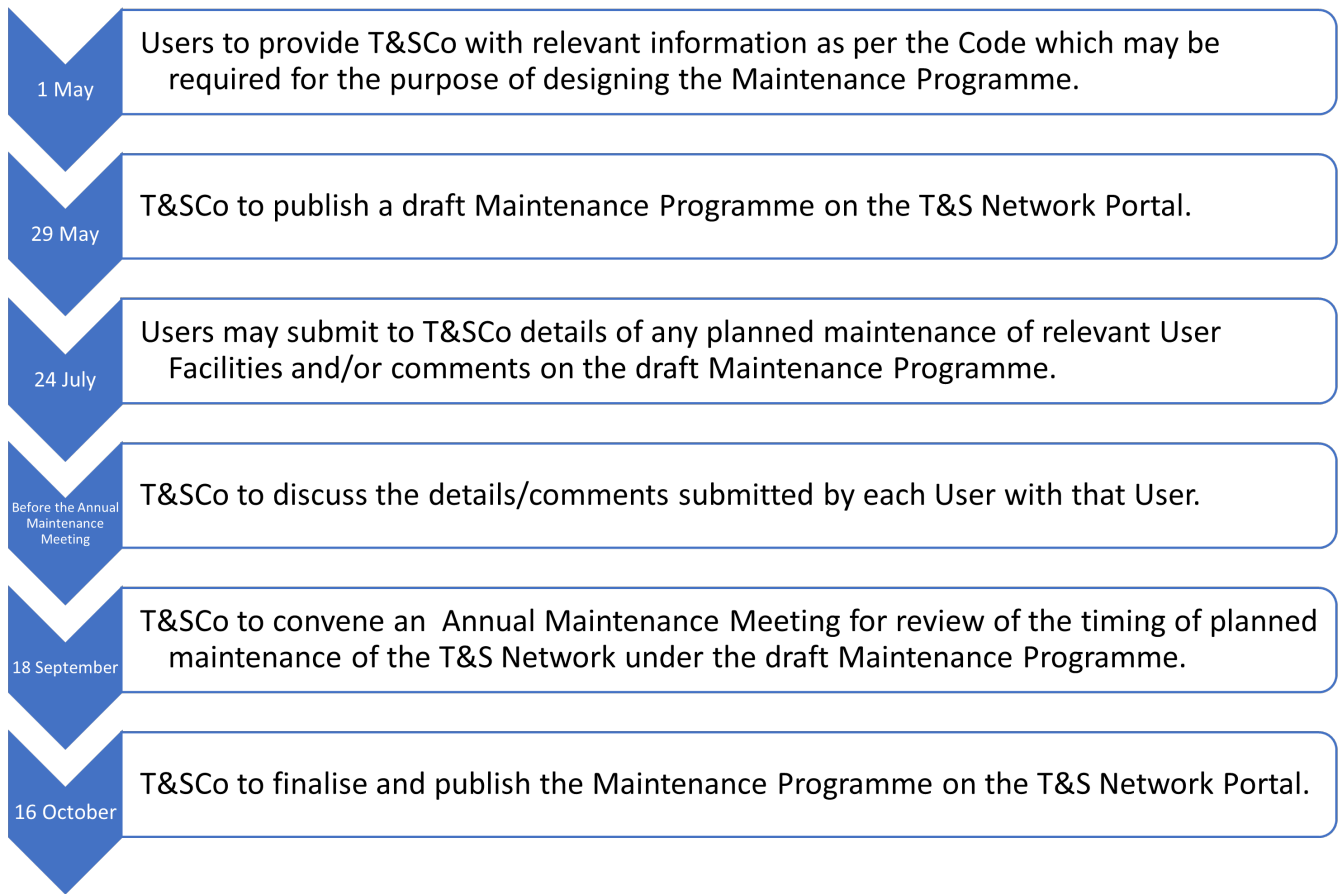
The Code defines the requirements for the planning, preparation and publication of a Maintenance Programme that details planned maintenance provisions, over a 5 year time horizon, being the next charging year and the subsequent 4 years. It will be updated annually and published by 16 October prior to the start of the charging year. T&S Co must use reasonable endeavours to avoid change, and give 20 business days' notice in the event that the start date/duration of programmed maintenance changes, unless Users agree otherwise. These measures are intended to maximise certainty and notice on the expected timings and durations of planned maintenance.

Reactive Maintenance can be done outside the Maintenance Programme. T&S Co must notify affected Users as soon as it identifies need for Reactive Maintenance and give as much notice as possible.

When preparing the Maintenance Programme, T&S Co are required to have regard to the need to coordinate its maintenance with the maintenance of Users, to maximise the volume of CO<sub>2</sub> stored. Users are therefore required to submit planning information to the T&S Co, to inform the draft Maintenance Programme proposals, which are then discussed at an Annual Maintenance Meeting. See figure 1 in relation to the process and timetable for the preparation of a Maintenance Programme.

There is no specified annual maintenance window, but T&S Co operating different T&S Networks are obliged to consult with each other on draft Maintenance Programmes, to avoid adverse impacts on each other and Users (e.g. by creating supply chain availability pressures).

**Figure 1: The proposed process for developing the Maintenance Programme. Dates given represent the latest date by which this stage of the planning process must be completed.**



**Question**

**9. Do you consider that the process and timelines proposed for maintenance are acceptable?**

**Section F: Network Design and Specification**

This section specifies the requirements that Users delivering CO<sub>2</sub> to the T&S Network must comply with. It contains provisions relating to CO<sub>2</sub> entry conditions, network design specifications, metering/measurement requirements and details of the CO<sub>2</sub> Re-use Service.

**Carbon dioxide metering**

It will be necessary to ensure that the quantity and composition of any CO<sub>2</sub> stream are known for fiscal, operability and safety reasons. Therefore, the Code provides general and network specific CO<sub>2</sub> specifications, and network specific Measurement Requirements, as Annexures A to E. These are designed to capture the specific requirements for both fiscal and non-fiscal Measurement Equipment.

- **Annexure A:** Carbon Dioxide Specifications – General
- **Annexure B:** Carbon Dioxide Specifications – Northern Endurance Partnership
- **Annexure C:** Carbon Dioxide Specifications – Hynet

- **Annexure D:** Measurement Requirements – Northern Endurance Partnership
- **Annexure E:** Measurement Requirements – Hynet

These requirements are anticipated to include detailed specifications for metering instruments, as well as the procedures and standards by which compositional analysis, flow rate, temperature and pressure will be measured and include parameters regarding accuracy/regularity of checks, control systems, operational data transmission and quality assurance for example.

The Measurement Requirements are yet to be populated in the current version of the HoTs. It is anticipated that such requirements will be populated ahead of FID. Given that CCUS emitter business models impose payment mechanisms predicated on the performance of capture plants and process monitoring to ensure that captured CO<sub>2</sub> meets T&S Network Entry Specifications, there is therefore a common interest in establishing a set of Measurement Requirements capable of meeting the requirements of both the business model supported Users and the T&S Co alike.

To date, government has sought to achieve this by developing a T&S Metering Specification to be included in the emitter revenue support contracts which will then also form the basis of the Measurement Requirements under the Code in relation to the boundary flow meter at the User's Delivery Point. To this end, Section F of the Code acknowledges that, in addition to the high-level Measurement Requirements which apply to all Users, there will also be Local Requirements which are additional requirements including User Requirements, that apply to a User's Delivery Point and/or the Measurement Equipment at the User's Delivery Point and which will be specified in the individual Connection Agreement with that User. Under the Code, the T&S Co is required to take into account any User Requirements, which include any requirements under emitter revenue support contracts, in developing the Local Requirements.

Where relevant, the following sections therefore identify areas of the T&S Metering Specification which are likely to be reflected in the Measurement Requirements and/or the Local Requirements for emitter business model backed Users under the Code.

### **Measurement uncertainty requirements**

It is proposed that the overall uncertainty of the measurement of the Metered CO<sub>2</sub> Output exported by a User on to a T&S Network, shall at all times be equal to or less than +/-1.5% of the measured value at 95% confidence interval.

It is proposed that the overall uncertainty of the measurement of the Metered CO<sub>2</sub> Rich Stream output exported by a User on to a T&S Network, which includes CO<sub>2</sub> and other components, shall at all times be equal to or less than +/-1% of the measured value at 95% confidence interval.

It is proposed that these shall be calculated in accordance with internationally accepted standards including but not necessarily limited to ISO/IEC Guide 98.

### **Measurement Equipment**

A T&S Co will calculate a User's Flow Charge (see Section H) from the quantity of CO<sub>2</sub> Rich Stream that a User exports on to the network. This will be determined via a flow meter instrument. Under the Code, each User is required to, at its own cost, install, commission, operate and maintain flow Measurement Equipment to determine the quantity of CO<sub>2</sub> Rich Stream (measured in tCO<sub>2</sub>) flowing into the T&S Network at a Delivery Point. The

measurement of quantity of mass is required to be without bias and with an uncertainty of better than +/-1% of the measured value at 95% confidence interval of reading over the specified flow range. T&S Charges, including the Flow Charge component, will be treated as a pass-through cost under the terms of the relevant emitter revenue support contract<sup>11</sup> held by the User whereby the contract counterparty pays the User who will then subsequently pay the T&S Co and this is kept separate from the agreed strike price or availability payment rate as applicable.

For Users who are supported under an emitter revenue support contract, measurement data from this flow meter instrument will also be used by the User to determine its CO<sub>2</sub> capture rate and quantity which contract payments under the relevant business model are informed from. Therefore, it is important that this instrument is suitable for its dual function under both the emitter revenue support contracts and the Code and necessary to avoid, as far as practicable, foreseeable measurement disputes arising if separate flow meter instruments are used.

### **Flow meter instrumentation**

Given the dual function of the flow meter discussed above, a set of proposed flow meter specifications has been developed under the emitter business models which may be included in the Measurement Requirements under the Code. These specifications are currently agnostic to technology selection but rather set an outcome approach which is to achieve the required maximum uncertainty requirements. Users could utilise either a mass flow meter or volumetric flow meter, however this may be influenced by more specific T&S Co requirements. If a User selects a volumetric flow meter, a densitometer instrument would also be required to provide total mass quantity of CO<sub>2</sub> (Rich Stream).

### **Compositional analysis equipment – fiscal**

Compositional analysis downstream of the capture process is necessary under the emitter revenue support contracts to determine CO<sub>2</sub> concentration in the resulting CO<sub>2</sub> Rich Stream (i.e. the CO<sub>2</sub> minus any impurities (e.g., CO, H<sub>2</sub>O NO<sub>x</sub>, Ar, O<sub>2</sub>, Amines, NH<sub>3</sub> in the stream directed to the T&S Network), in order to determine capture rate as a percentage of the overall CO<sub>2</sub> flow and capture quantity. This is not directly required by a T&S Co for the purposes of calculation of the Onshore or Offshore Flow Charges as the T&S Flow Charge component is based on the total flow of CO<sub>2</sub> Rich Stream. However, we understand that a T&S Co may have an interest in the telemetry from this instrument in order to satisfy its UK Emissions Trading Scheme (UK ETS) compliance requirements and therefore it may be the case that any such requirements for this instrument as specified in the emitter business models are also specified by the T&S Co as part of the Measurement Requirements. However, compositional analysis equipment necessary for fiscal purposes under the emitter business models is not a requirement under the Code.

We are considering whether measurement techniques that directly measure CO<sub>2</sub> concentration can provide sufficient levels of accuracy to meet the required uncertainty budgets. It is noted that indirect measurement of CO<sub>2</sub> concentration by measuring impurities in the CO<sub>2</sub> Rich Stream and inferring CO<sub>2</sub> concentration from this may provide a viable alternative approach to meeting the overall uncertainty budget. We are minded to require direct measurement of CO<sub>2</sub> only under the emitter business models. This is because, where the process flue gas composition is variable, inferring CO<sub>2</sub> concentration is inherently more uncertain because of the risk of the unknown gas composition including species that are not being monitored for. Secondly, we understand that it is technically more onerous to measure for a range of species

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<sup>11</sup>Refer to the relevant CCUS business model summary for how T&S Flow Charges are handled under the ICC, DPA, BECCS or Low Carbon Hydrogen Agreement business models.



in the CO<sub>2</sub> Rich Stream relative to CO<sub>2</sub> only, therefore direct measurement provides a more cost-efficient approach. This also means that verification and quality assurance of the measurement system is more straightforward. However, we are continuing to engage with industry on this matter and this position is subject to change as policy and evidence base is developed.

To determine CO<sub>2</sub> concentration we understand that an online Gas Chromatograph optimised for high-purity CO<sub>2</sub> can achieve the accuracy required to meet the specified Metered CO<sub>2</sub> Output Uncertainty Requirement [ $\pm 1.5\%$ ]. It is noted however that alternative analytical methods to determine CO<sub>2</sub> concentration to within the required CO<sub>2</sub> uncertainty requirement could be viable and it is proposed that the CO<sub>2</sub> Metering Specification under the emitter revenue support contracts will be agnostic to technology selection where this can be supported by appropriate quality assurance standards. It is proposed that there will also be a requirement to take periodic offline samples to be analysed at an appropriately accredited laboratory on at least a 6 monthly frequency to validate the compositional analyser results.

### **Validation, quality assurance and auditing fiscal metering system**

Under the Code, the T&S Co would be granted access rights to measurement instruments located on the User's Facility in order to inspect and test their operation and ensure that any Measurement Equipment complies with the requirements of the Code. Importantly, the Measurement Equipment will also need to be validated by an Independent Verifier appointed by T&S Co. This validation will need to take place before any CO<sub>2</sub> is first delivered into the T&S Network, and after that at least annually.

In addition to the inspection and validation process, where either Party believes that any part of the Measurement Equipment has been malfunctioning, the Code provides for a process whereby the Parties should seek to agree any necessary adjustments to correct such malfunctions, and where the Parties are unable to agree, to refer such matters for determination by the Independent Verifier. In respect of any disputes regarding the malfunctioning of the boundary flow meter, any determination of the Independent Verifier will also be communicated to the Central Data Service (see Section I for further detail on the CDS) in order for any Flow Charges during such periods to be recalculated by the T&S Co under Section H.

### **Non-fiscal Carbon Dioxide Rich Stream impurity monitoring**

Non-compliance with the CO<sub>2</sub> Specification may result in downstream impacts to the safety, protection and operability of the T&S Network. Critical impurities within the CO<sub>2</sub> stream output that shall be monitored shall be specified by T&S Co in the Measurement Requirements and/or the Local Requirements. The Composition Analysis Equipment measurement range, resolution and uncertainty shall be appropriate to meet the Carbon Dioxide Specification permissible levels and are to be agreed with T&S Co. Given that the range of components present in the CO<sub>2</sub> Rich Stream will be dependent on the individual User's upstream process, and the type of capture technology employed, it is foreseeable that individual User impurity monitoring requirements may vary.

It is proposed that details regarding compositional analysis instrument specifications necessary to monitor compliance with the CO<sub>2</sub> specification will therefore most likely be included in Connection Agreements between T&S Co and Users only. This is because information from these instruments is not required by the emitter revenue support contract counterparty for payments purposes under the CCUS emitter business models and the emitter revenue support

contract counterparty is not the competent authority to ensure compliance with these requirements whereas the T&S Co operating the T&S Network is.

## Questions

**10. Do you have any feedback on the proposed approach the Code will take to CO<sub>2</sub> metering? Please provide justification in your answer.**

**11. Are the proposed CO<sub>2</sub> specifications and measurement requirements appropriate?**

## Carbon dioxide Re-use Service

Feedback received to date indicates that for some Users, it would be beneficial to have access to a service allowing CO<sub>2</sub> to be temporarily borrowed from the T&S Network and used to optimise plant start up/shut down processes, before being returned to the network. Such a service could avoid the need for more expensive engineered solutions to maintain capture rates during frequent plant start up periods. It is proposed that it will not be mandatory for a T&S Co to provide the Re-use Service to a User. Instead, the Code will include provisions allowing a User to request the Re-use Service, and T&S Co, acting as a Reasonable and Prudent Operator, shall offer it where this is technically feasible and where this will not adversely impact the operation of the T&S Network. To ensure the provision of the service does not impact T&S Co or other Users, government are seeking to resolve a small number of issues.

Depending on the purpose for which the CO<sub>2</sub> is being transported and stored, some CO<sub>2</sub> re-use activity may fall within the definition of a licensable activity in Section 2 of the Energy Act 2023. To ensure the licensing requirement under the Act doesn't impact activities which it is not considered either technically or economically necessary nor appropriate to regulate, the Secretary of State is able to grant exemptions from the requirement to hold a T&S Licence. The department is currently developing policy for Licence exemptions. We anticipate consulting in due course on specified classes of exemptions and/or specified persons to be exempt from the licensing requirements, to be established in secondary legislation.

Emitter revenue support contracts<sup>12</sup> specify undertakings required of a User to allow access to and testing of meters by the contract counterparty, for the purposes of reading, testing, or verifying Facility Metering Equipment. Similar access rights for a T&S Co to inspect the measurement equipment associated with any CO<sub>2</sub> re-use activity on the User site will be specified in the Code. Reciprocal rights for a User or its representative to access and inspect the infrastructure necessary to undertake a CO<sub>2</sub> re-use activity but situated on the T&S Network facility will be provided in the Connection Agreement.

To ensure appropriate cost allocation for implementation of CO<sub>2</sub> re-use, any capex costs associated with providing the infrastructure necessary to undertake this will be borne by the User requesting provision of this service. There may be an opex cost faced by a T&S Co in providing such a service and it is proposed that this should be recovered on a cost reflective basis by way of a User-specific charge payable by the User to the T&S Co, separate to all other standard Charges levied on Users under Section H of the Code.

The concept of CO<sub>2</sub> re-use was not considered as part of the initial development of the various business models or as part of the Code. Having identified the benefits of its inclusion through

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<sup>12</sup> [CCUS business models including the DPA, ICC and Hydrogen Production Business models.](#)

recent User engagement, government is reviewing the emitter business models to understand how this activity could be enabled.

## Question

### 12. Is the proposed approach on the CO<sub>2</sub> Re-use Service appropriate?

## Section G: Industrial Procedures

It is proposed to define the requirements for Industrial Procedures within the Code. The following proposals for Industrial Procedures as set out in Section G have been refined following engagement sessions held and subsequent feedback from T&S Co and Users.

A decision to move away from the concept of separate "Core Industrial Procedures" and "Supplementary Industrial Procedures" was taken as the feedback from both T&S Co and Users indicated that the differentiation between Core Industrial Procedures and Supplementary Industrial Procedures was unclear and potentially unnecessary given the timing of publication to meet industry standards.

The Code therefore contains a single list of "Industrial Procedures" which, once developed in accordance with Section G, both T&S Co and Users are required to comply with. The list of Industrial Procedures to be developed by T&S Co has been proposed by government with input from T&S Co and Users and is intended to cover procedures which are likely to affect more than one User. The Industrial Procedures comprise:

- Emergency Procedure;
- Commissioning (CCS Network) Procedure; and
- Isolation Procedure.

The content of the listed Industrial Procedures is required to be developed, drafted and published by T&S Co in the period between FID and the Commercial Operations Date (COD). No procedures will be published prior to FID for initial networks and it is not intended that the content of the procedures is contained within the Code. Given this, Section G sets out a framework within which the T&S Co must develop the content of the Industrial Procedures as well as a process for Users to review and comment on draft content and agree a final version.

In addition to at all times conforming to key principles which are set out in the Code, in developing the Industrial Procedures, T&S Co are required to ensure that they also comply with Terms of Reference (ToRs) for each Industrial Procedure which will be Annexed to the Code.

To the extent that after FID a Party considers that an additional industrial procedure is required which:

- is likely to affect more than one User in the relevant T&S Network;
- places obligations onto Users; and
- is likely to materially impact a User's cost base, maintenance or other operational processes,

the Code also provides a process whereby the Parties agree the content of any such procedure prior to the Code being modified to include that procedure within the list of Industrial Procedures set out in Section G.

## Questions

- 13. Is the proposed approach on Industrial Procedures (including the list of proposed Industrial Procedures and the Terms of Reference for each) adequate?**
- 14. How should the proposed Terms of Reference for each listed Industrial Procedure be further developed ahead of the Code being implemented, to ensure sufficient and relevant detail?**

## Section H: Charges, Invoicing and Payment

T&S Co will have a “user pays” revenue model under which it will collect its Allowed Revenue<sup>13</sup>, set in accordance with the Economic Regulatory Regime (ERR) under its Licence, through T&S Use of System Charges (T&S Charges)<sup>14</sup> paid by Users of the T&S Network<sup>15</sup> to the extent possible.

T&S Charges will be determined using the generic charging methodology as it applies to all T&S Co, initially developed by the government and industry, and set out in Section H of the Code. The modification process set out in the Code (Section B) will enable proposals to modify the charging methodology in the future.

The primary purpose of T&S Charges is to enable T&S Co to collect its Allowed Revenue. Beyond that, the design of the charging methodology has been guided by charging principles that focus on Users. These principles include the need to provide signals to Users about the cost that their use of the infrastructure imposes on T&S Co to encourage efficient use, sufficient simplicity to ensure that Charges can be easily implemented and encourage use of the network, non-discrimination and transparency of methodology.

This section presents our position on:

- Charging structure and Charges;
- Mutualisation; and
- Invoicing and payment

### The onshore-offshore boundary

T&S Charges will be levied on Users for the use of any part of the T&S Network. Some Users will be classified as Onshore Users and some as Offshore Users. This recognises that in future, some Users will utilise both the Onshore Transport System (in part or in full) and the Offshore Pipeline Infrastructure to transport CO<sub>2</sub> to the Storage Complex, whilst others

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<sup>13</sup> Allowed Revenue will be set by the Authority to cover T&S Co’s efficiently incurred costs and a fair return

<sup>14</sup> This section focused on T&S Use of System Charges, not any other type of charge. Furthermore, no connection charge will be levied on Users in the early operational phase of the T&S Network

<sup>15</sup> The term “T&S Network” captures the Onshore Transportation System, the Offshore Pipeline and the Storage Complex

(namely non-pipeline transport (NPT)) users might only utilise Offshore Pipeline Infrastructure to transport CO<sub>2</sub> to the Storage Complex.

Section K provides the following definitions, which are relied on for charging purposes:

- **Onshore User** means a User with a Delivery Point which connects to the T&S Network at the Onshore Transportation System, including any User with an emergency shutdown valve upstream of any high pressure compression or pumping inlet header at the Terminal.
- **Offshore User** means a User with a Delivery Point which connects to the T&S Network at the Offshore Transportation and Storage System.

### Charging structure and Charges

As described above, recognising the possibility that not all Users will utilise Onshore Transportation System (e.g. NPT Users) two types of T&S Charges have been created:

- Onshore Transportation Use of System Charge (Onshore Charge); and
- Offshore Pipeline + Storage Complex Use of System Charge (Offshore Charge).

The definition for an Onshore User recognises that the Onshore Transportation System will be designed to serve all of these Users, including those located close to the terminal of the Onshore Transportation System. Onshore Users will be subject to the Onshore Charge and the Offshore Charge.<sup>16</sup> Any User that transports its CO<sub>2</sub> directly to the Offshore Pipeline via NPT will only pay the Offshore Charge.

Both the Onshore Charge and the Offshore Charge will be comprised of the following three elements:

- **Flow Charge**<sup>17</sup> - calculated based on a User's actual amount of CO<sub>2</sub> injected into the T&S Network multiplied by the Flow Charge Rate. The Flow Charge Rate is set to recover the variable opex element of Allowed Revenue for the charging year, based on Users' forecasts of the amount of CO<sub>2</sub> that will be injected into the T&S Network;
- **Capacity Charge** – calculated based on a User's Registered Capacity<sup>18</sup> for the charging year multiplied by the Capacity Charge Rate. The Capacity Charge Rate is set to recover the depreciation and return elements of Allowed Revenue for the charging year, and is calculated per unit of Network Capacity<sup>19</sup>; and
- **Network Charge**<sup>20</sup> - calculated based on a Users' Delivery Point Size<sup>21</sup> set out in the Connection Agreement multiplied by the Network Charge Rate. There are two elements of the Network Charge Rate, as follows:

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<sup>16</sup> The Onshore Charge and the Offshore Charge could be included on a single charging statement

<sup>17</sup> Previously referred to as the Volumetric Charge

<sup>18</sup> Registered Capacity is the maximum capacity of the T&S infrastructure that a User can use over a certain time period

<sup>19</sup> Measured as the most restricted communal element of the T&S infrastructure

<sup>20</sup> Previously referred to as the Residual Charge

<sup>21</sup> A User's Delivery Point Size is the physical size of the Delivery Point connecting the User's infrastructure to the T&S infrastructure

- the **Proportionate Network Charge Rate**, which is set to recover elements of Allowed Revenue for the charging year not covered by the Flow Charge and Capacity Charge, e.g. fixed opex, and is calculated per unit of Network Capacity<sup>22</sup> and
- the **Mutualised Network Charge Rate** is set to recover as much of the Allowed Revenue as possible that is not collected through the Flow Charge, the Capacity Charge and the Proportionate Network Charge. The Mutualised Network Charge Rate will also be calculated per unit of Users' aggregate Delivery Point Size, and further detail is set out in the Mutualisation section below.<sup>23</sup>

The design of the three elements of the T&S Use of System Charges reflects Users' influence over some, but not all, elements of Allowed Revenue. The amount of CO<sub>2</sub> a User injects into the T&S Network and its Registered Capacity will influence T&S Co's variable opex, and capex which in turn feeds into depreciation and return elements of Allowed Revenue. As such, the Flow Charge and Capacity Charge have been designed to respond to changes in the amount of CO<sub>2</sub> a User injects into the T&S Network during the charging year and the Registered Capacity it books for the charging year, respectively, to encourage Users to make efficient decisions in regards of these parameters. Conversely, Users' decisions do not influence other elements of Allowed Revenue, e.g. fixed opex, and therefore there is no overall benefit from Users changing their behaviour year-on-year to reduce their exposure to these costs in their T&S Charges. As a result, the Network Charge is applied to a Users' Delivery Point Sizes, which are fixed overtime.

An illustrative example of the calculation of the Flow Charge, Capacity Charge, and Proportionate Network Charge is set out in Appendix 1 and the accompanying Excel file.

### Locational charging

It is expected that in the early operational phase Users will have little or no choice over their location. Hence our position is that the Onshore Charge for the Onshore Transportation System should not vary by the distance over which the CO<sub>2</sub> is transported in the early operational phase. The exclusion of a distance charge creates a level playing field for Users regardless of where they are located and promotes the pace of development of the CCUS sector, connecting the most sustainable Users without financially penalising Users located further upstream.

Our position regarding the Offshore Charges for the Offshore Pipeline Infrastructure and Storage Complex is that it should not include an element to take account of use of the length of the Offshore pipeline, as Users do not have control over its length and their use of the length of it will not vary. It is expected that in the early operational phase CO<sub>2</sub> will travel the full length of the Offshore Pipeline to be stored.

Any decision on the design of Use of System Charges in the early operational phase does not preclude changes to the Charges in later years, subject to consultation through the Section B modification process. We acknowledge that injection of CO<sub>2</sub> at the storage site wellheads from ships may become a feature of CCUS clusters in the future. If this materialises in the future, we

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<sup>22</sup> For the purposes of this document the part of the Network Charge driven by the Proportionate Network Charge Rate will be referred to as the Proportionate Network Charge

<sup>23</sup> For the purposes of this document the part of the Network Charge driven by the Mutualised Network Charge Rate will be referred to as the Mutualised Network Charge

anticipate that the design of the T&S Charges will be revisited to appropriately support this use-case.

### **Suspension of User Charges in relation to insured risks**

It is expected that under the Licence and the Government Support Package, T&S Co will be obliged to obtain appropriate insurance against asset damage risks. If the T&S Network is in outage due to asset damage occurring that is covered by business interruption insurance obtained by the T&S Co, User Charges (i.e. Capacity Charges and Network Charges) will be suspended for the period covered by business interruption insurance. Allowing insurance to respond to asset damage is a cost-efficient response and aligns with government's ambition for the nascent insurance sector for CCUS to be developed.

The suspension of User Charges is needed in an asset damage event to ensure that there is revenue loss against which the T&S Co can make a claim.

### **Question**

#### **15. Do you agree with the proposed charging structure, Charges and associated definitions?**

### **Mutualisation**

The Onshore Charge and Offshore Charge are made up of a Flow Charge, Capacity Charge and Network Charge, with the Network Charge in turn being made up of the Proportionate Network Charge and the Mutualised Network Charge, as indicated above.

The Capacity Charge has been designed to be a fair "proportionate charge". This means that the proportion of depreciation and return elements of Allowed Revenue that a User pays through the Capacity Charge is equal to its Registered Capacity as a proportion of Network Capacity. Similarly, the Proportionate Network Charge is also proportionate, with the proportion of relevant Allowed Revenue elements that a User pays through the Charge being equal to its Delivery Point Size as a proportion of Network Capacity.

The design of the Capacity Charge and the Proportionate Network means that T&S Co will not collect all of its Allowed Revenue, i.e. there will be a shortfall, if the sum of Users' Registered Capacity is less than Network Capacity and/or the sum of users' Delivery Point Sizes is less than Network Capacity<sup>24</sup>. Given this, to enable as much Allowed Revenue to be recovered from Users as is economic, T&S Charges allow for mutualisation of any such expected shortfall in the collection of Allowed Revenue across Users. This mutualisation is applied through the Mutualised Network Charge if a User's Flow Charge, Capacity Charge and Proportionate Network Charge do not already exceed a User's Mutualisation Cap. If mutualisation is applied to a User, its Mutualised Network Charge will equal to the lesser of: the amount needed to be collected from the User for the shortfall to be covered (taking into account mutualisation across other Users); or the User's Mutualisation Cap<sup>25</sup>.

### **Mutualisation Cap**

The Mutualisation Cap is designed to prevent mutualisation making it uneconomic for Users to pay T&S Charges, i.e. a situation where the T&S Charge is higher than the expected cost of

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<sup>24</sup> The revenue collected through the Flow Charge will automatically adjust to the amount of CO<sub>2</sub> that is injected into the T&S Network and will enable T&S Co to collect its efficiently incurred variable opex

<sup>25</sup> If there is any Allowed Revenue that is not expected to be collected after mutualisation, the remaining Allowed Revenue will be collected through the Revenue Support Agreement

emitting CO<sub>2</sub>. Given the Mutualisation Cap's purpose, the Mutualisation Cap will be set equal to an estimate of the UK CO<sub>2</sub> price over the forthcoming charging year.

The Mutualisation Cap, which will be calculated as a £ / tonne of CO<sub>2</sub> figure, will be applied to each user by multiplying the cap by the User's forecast of CO<sub>2</sub> that will be injected into the T&S Network to provide a monetary figure, i.e. in £. This monetary figure represents a User's own Mutualisation Cap and is compared to the total amount that a User is expected to pay through T&S Charges, but it acts as a limit to each User's Mutualised Network Charge Rate.

### **Calculating the Mutualisation Cap**

The Mutualisation Cap will be set when the T&S Charges are set, in advance of the forthcoming charging year that runs from April to March of the following calendar year. The Mutualisation Cap is fixed for the charging year.

For charging year  $t$ , the cap will be calculated based on the average of the daily average price observed for the March  $t-1$ <sup>26</sup>, December  $t$ , and March  $t$  UK ETS futures contracts<sup>27</sup> over the preceding three-month period. This approach uses market data available at the time the cap is set that is observable by all Users, considers the prices for futures contracts for different delivery periods that market participants will have paid, and have a three-month observation period reducing the likelihood that the estimate is impacted by any short-term price shocks.

Calculating the Mutualisation Cap based on futures contracts has been adopted as opposed to a backward-looking approach with a true-up of the actual UK ETS price in order to simplify the Mutualisation Cap.

### **Split of Mutualisation Cap**

The Mutualisation Cap will be split across the Onshore Charge and the Offshore Charge, in line with the split of Allowed Revenue for the forthcoming charging year between the Onshore Transportation System and the Offshore Pipeline Infrastructure and Storage Complex. For example, if 30% of Allowed Revenue was attributable to the Onshore Transportation System, the Mutualisation Cap for the Onshore Charge would be 30% of the total Mutualisation Cap calculated as described above. Consequently, the Mutualisation Cap for the Offshore Charge would then be 70% of the total Mutualisation Cap.

For an Onshore User that will pay both the Onshore Charge and the Offshore Charge, its Onshore Charge will be subject to the Onshore Mutualisation Cap and its Offshore Charge will be subject to the Offshore Mutualisation Cap. However, NPT Users that only use the Offshore Pipeline and Storage Complex will only pay the Offshore Charge and it will be subject to the Offshore Mutualisation Cap.<sup>28</sup>

Splitting the Mutualisation Cap across the Onshore Charge and the Offshore Charge enables T&S Co to collect as much Allowed Revenue from Users across the two types of Charges, while still prevent mutualisation making it uneconomic for Users to pay T&S Charges.

### **Questions**

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<sup>26</sup> This contract will deliver before the start of the charging year in question, but as CO<sub>2</sub> prices are expected to rise overtime this may result in a lower Mutualisation Cap being estimated therefore putting a lower limit on mutualisation for Users

<sup>27</sup> A contract for UK ETS Allowances that can be bought in advance for delivery at the date stated on the contract

<sup>28</sup> This approach takes into account that NPT Users will incur costs of their NPT



**16. Do you agree with the use of a Mutualisation Cap to limit Users' exposure to mutualisation?**

**17. Do you agree with the proposed calculation of the Mutualisation Cap?**

## **Invoicing and payment**

T&S Co will be responsible for setting T&S Charges on an annual basis to collect the Allowed Revenue for the forthcoming regulatory year, set by the Authority in accordance with the T&S charging methodology. T&S Charges will be set annually, four months in advance of the charging year, based on Users' forecast of volumes of CO<sub>2</sub> to be injected into the T&S Network, their Registered Capacity and Delivery Point Size. At the same time that T&S Charges for the forthcoming charging year are published, forecast T&S Charges for the following two years will be made available. Setting T&S Charges annually will provide a degree of certainty and stability for Users, whilst providing flexibility to update them frequently enough to reflect the User environment and costs. Forecasting Charges up to two years in advance will also inform Users' decisions on future usage of the infrastructure.

During the charging year, T&S Charge invoices<sup>29</sup> will be sent directly to Users each month 10 days after the charging month has ended and will be calculated on an ex-post basis, i.e. each User will be invoiced for the actual CO<sub>2</sub> injected into the T&S Network the previous month. Charging invoices on an ex-post basis mitigates against the risk of Users' inaccurately forecasting their use of the infrastructure, which may be higher during the early operational phase. Users will be required to pay their invoice<sup>30</sup> to T&S Co within 35 days after the end of the billing period to which the invoice relates. While this timeframe will apply to all Users, it has been designed to accommodate the payment timetable established under the emitter revenue support contracts of supported Users.

If an invoice has not been paid on or before the 5th Business Day after the Invoice Due Date, T&S Co can issue a Late Payment Notices and interest will be applied to late payments to incentivise Users to pay their T&S Charges in a timely manner. If payment has not been made within five Business Days of the Late Payment Notice being issued, there are a number of measures available to T&S Co including refusal to accept delivery of CO<sub>2</sub> at the User's Delivery Point.

## **Question**

**18. Are the proposals on invoicing and payment appropriate?**

## **Section I: Data**

### **General**

Section I of the Code sets out at a high level, the different types of Data that will be generated in the operation of the T&S Network and various provisions relating to the processing, access to, and management of that data.

In relation to User-Specific Data, it is anticipated that T&S Co will, after FID but prior to the COD, be required to develop and publish Data Transfer Procedures in relation to its T&S

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<sup>29</sup> The invoice will include all elements of T&S Charge (Flow, Capacity, and Network)

<sup>30</sup> All elements of the Charge are to be paid on a monthly basis

Network. Such Data Transfer Procedures are required to comply with the minimum content requirements which are to be set out in Annexures to the Code and mutually agreed between all Users and T&S Co after FID but in advance of the preparation of the Data Transfer Procedures (currently no later than 12 months prior to the COD). Both T&S Co and Users will be required to comply with the Data Transfer Procedures at all times.

Section I also provides that T&S Co will be required to procure for its T&S Network both an Independent Verifier capable of performing the functions required under Section F in relation to verification and validation of Measurement Equipment, as well as the T&S Network Portal, a web portal established and maintained by T&S Co to publish and provide access to up to date information relating to certain operational matters. Both the Independent Verifier and the T&S Network Portal procurements will be required to comply in all material respects with ToRs for such appointments which will ultimately be included within the full form Code, prior to FID.

### Questions

**19. How far in advance of the Commercial Operations Date should the Draft Data Annexures be developed?**

**20. Are the wider data provisions appropriate?**

### Central Data Service

Ensuring that there is sufficient confidence in the management and delivery of public money used to support the emitter and T&S Co business models requires that the calculation of T&S Charges is aligned with the calculation of Low Carbon Contracts Company (LCCC)<sup>31</sup> payments to Users. The Code proposes the appointment of a Central Data Service (CDS) by T&S Co to provide this confidence through a single platform for aggregated User boundary meter data. This is only for flow meter data that is used for fiscal purposes by both T&S Co and LCCC.

### Context

The flow of CO<sub>2</sub> from a User to a T&S Co is measured at the boundary flow meter. This raw data is aggregated and used as inputs to the calculation of Onshore and Offshore Flow Charges and payments by both T&S Co (for the purposes of invoicing under the Code) and the LCCC (for the purposes of payment of pass-through Charges under the emitter revenue support contracts). It is mutually beneficial for both Users and T&S Co for there to be sufficient confidence the system provides an objective means of calculating Onshore and Offshore Flow Charges. For both Parties this potentially minimises disputes which may arise over invoices, and for Users supported by an emitter revenue support contract with the LCCC as a contract counterparty, this provides assurance to the LCCC that there has been appropriate management and delivery of public funds. To avoid the risk of this flow meter data from multiple network Users becoming misaligned in T&S Co, User and/or LCCC systems, and to reduce the risk of invoice disputes, the government's minimum requirements are:

- A “single source of truth” for data used for fiscal purposes by both Users, the LCCC and T&S Co, including transparency of data processing and aggregation;
- Centralised and agreed flow meter data aggregation principles with governance in place to manage any changes; and

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<sup>31</sup> Government anticipates the Low Carbon Contracts Company (LCCC) will be the business models counterparty, subject to successful completion of administrative arrangements.

- Outputs of any disputes on data to be reflected within the central data system.

### The solution

The CDS as set out within the Code will provide a central and “single source of truth” across all Parties, for processed and aggregated boundary flow meter data used for invoicing. The aggregated data produced by the CDS will be accessible by T&S Co, Users and LCCC. In particular, the CDS will produce a “Processed Flow Meter Data Statement” for each billing period under the Code, which will be used by T&S Co to calculate Flow Charges. The remit of the CDS will not extend to other data such as operational or network integrity data. The Code will ultimately (as part of the full form agreement) provide for an agreed ToRs which the CDS Contract must comply with when procured, in order to meet the requirements of government and the LCCC for the management of flow meter data related to the delivery of public money.

The procurement of the CDS should be self-standing within the T&S Network and not tied to the LCCC or government ownership. The Licensees will jointly procure a single CDS for the system with a requirement in the Code for future T&S Co to accede to this CDS Contract, with governance set out within the ToRs. It is intended that the mode of procurement of the CDS and the role of the CDS will be consistent with the future potential expansion of the T&S Networks and the needs of future Users, including potential future merchant Users and Users with alternative funding routes. In terms of the costs of the CDS, CDS costs are to be taken into account in the assessment of the T&S Co's opex allowance under the T&S Co's Licence.

### Question

- 21. Is the proposed CDS proportionate to meeting the minimum requirements of managing the delivery of public funding?**

## Section J: General

Section J contains provisions which are intended to apply across all sections of the Code and which are by their nature, general. In addition to boilerplate provisions regarding areas such as notices and communications, governing law, third-party rights and assignment, Section J also covers default and termination and specific provisions regarding security and liability.

### Liabilities

#### Context and overall proposals

The intent of this part of the Code (Section J.10) is to exclude any liability between Users and T&S Co, other than a) liabilities which are explicitly provided for elsewhere in the Code, and b) liabilities in respect of either physical damage to the property of one Party by another (subject to caps), or the liability (in law) of either Party to a third-party.

These liabilities are further restricted by the explicit exclusion of several kinds of indirect or consequential losses, including loss of revenue and business interruption. For this version of the Code, we have also updated this provision to clarify that any UK ETS costs which may arise from a breach of the Code, or from a Party's performance of its obligations under the Code, are excluded from any financial liability between Users and T&S Co. The intent of this provision is to ensure that financial liabilities should relate only to the direct costs of remediating a specific property damage or third-party liability event.

In addition, we have introduced drafting to clarify that in a scenario whereby the T&S Co knowingly accepts CO<sub>2</sub> from a User which breaches the standard CO<sub>2</sub> specification, that User cannot subsequently be held responsible for any resultant damage caused. In the interest of clarity, this does not necessarily imply that a lack of informed acceptance of off-spec CO<sub>2</sub> on the part of the T&S Co is sufficient to assign liability to the relevant User; liability can only be established according to the concept of property damage as it exists in law, as in any other scenario.

Finally, in this section of the Code we are proposing to cap the level of financial liability associated with any single property damage or third-party liability event as follows:

- Liability of a User to the T&S Co: £20m
- Liability of the T&S Co to a single User: £20m
- Liability of the T&S Co to multiple Users: £100m

These caps will be set with the expectation that Parties to the Code should obtain appropriate commercial insurance up to the level of the relevant cap.

### **Policy intent**

The measures set out in Section J.10 of the Code are intended to give both Users and T&S Co certainty regarding their exposure to property damage and third-party liability risk, whilst also ensuring that all Parties to the Code are appropriately incentivised to implement mitigations against the risk of such events occurring in the first instance. There are several key ways in which these principles are reflected in the drafting of this section of the Code.

Firstly, by disallowing any financial liability other than that which is explicitly specified in the Code, and by excluding any indirect or consequential costs from these residual liabilities, we have sought to give developers a clear understanding of the range of liabilities to which they could be exposed. Importantly, this drafting also ensures that liability for property damage or third-party liability events must be established according to those concepts as they respectively exist in law; there is no opportunity, for example, for a T&S Co to negotiate a bespoke approach to property damage risk with a particular User, ensuring that there is a level playing field for all Parties to the Code.

Secondly, we have set the liability caps at a level which we believe is reflective of a reasonable worst case (RWC) scenario for property damage, in order to ensure that Parties to the Code are incentivised to behave in line with the appropriate level of risk, while balancing this with the need to ensure that we are not requiring smaller Users to obtain a prohibitively high level of insurance. In specific cases, we have also made adjustments to the RWC to account for how responsibility should be assigned between T&S Co and Users for managing specific property damage risks. This process is explained in more detail below.

### **Setting the level of the liability caps**

In order to set the liability caps above, government has conducted an internal exercise to shortlist a representative range of potential property damage scenarios, assigning each scenario a likelihood and impact rating on the basis of professional judgment. In order to arrive at a RWC for damage caused by Users to the T&S Co and vice versa, we discounted any scenarios which fell into the lowest likelihood category (<0.1%), as well as any scenarios where feedback from industry has indicated that the risk of damage could be mitigated through prudent network design choices.

Additionally, it should be noted that scenarios of damage to the T&S Network resulting from off-spec CO<sub>2</sub> entering the network have not been included in the assessment of the RWC. Elsewhere in the Code, government has made clear that responsibility for management of the CO<sub>2</sub> specification should be shared between Users and T&S Co; as such, it was deemed inappropriate for the liability cap to allow the T&S Co full coverage against property damage in this case.

Finally, in order to arrive at the proposed cap on liability of the T&S Co to multiple Users, a proposal of £100m was made on the basis that many of the scenarios identified could affect multiple Users simultaneously, and that increasing the individual cap by a factor of five is broadly representative of the expected number of Users which will connect to an early T&S Network.

The full results of the internal RWC exercise can be viewed in Appendix 2 of this document.

### Questions

- 22. Do you agree with the scope of financial liability which is allowed for in Section J of the Code?**
- 23. Do you agree that financial liability between Users and T&S Co should be driven by the concepts of property damage and third-party liability as they exist in law, rather than allowing for any agreement to be made directly between the Parties?**
- 24. Are you supportive of the liability caps proposed above? If not, please explain your reasoning, with supporting technical documentation where possible.**

### Post-termination liabilities

As acknowledged in Section E, where a User still holds Registered Capacity at their Discontinuance Date, the User will remain liable for payment of Capacity and Network Charges until three years after their Discontinuance Date. This liability reflects the substantial capital and infrastructure investment needed to connect a User to the network, with the intention that Users remain on the network for the period for which they hold Registered Capacity.

The exceptions to Users' post-termination liabilities are when User is giving a Discontinuance Notice due to:

- The failure of T&S Co to complete the relevant T&S Co Works, resulting in a Construction Longstop Default, or;
- A prolonged outage on the network.

The exceptions to the Users post-termination liabilities reflect that in these defined circumstances a User would be issuing a Discontinuance Notice due to conditions outside of their control. If a User discontinuing from the network results in a shortfall of collected Charges against Allowed Revenue, T&S Co is protected through mutualisation and the Revenue Support Agreement.

## Section K: Glossary

The Glossary sets out all the defined terms used in the Code. The different sections of the Code should be read alongside the Glossary.

## Exhibit A: Code Accession Agreement

As mentioned earlier in this consultation document, the first T&S Co(s) and User(s) to reach FID will sign the Code Agreement to give legal effect to the Code and become bound by it. Subsequent T&S Co and Users will accede to the Code Agreement by signing a Code Accession Agreement. Exhibit A sets out the Code Accession Agreement HoTs, and also includes the Code Agreement HoTs.

### Question

#### **25. Is the proposed Code Accession Agreement adequate?**

## Exhibit B: Construction Agreement

While each User will become a Party to the Code by signing the Code Agreement or the Code Accession Agreement, there is also a need to have bilateral agreements between T&S Co and each individual User to formally document the parameters of the individual User's rights under the Code. This is similar to the structure adopted in the gas and electricity contexts, where each user enters into bilateral construction and use of system/connection agreements with the network operator.

Therefore, the first of these bilateral agreements that a User will need to enter into with T&S Co is a Construction Agreement, to govern the Works required to be done by both T&S Co and the User in order to connect the User Facility to the T&S Network. To ensure that all Users are offered the same terms, the Construction Agreement will need to be based on the template included in the Code, subject to the inclusion of the various User-specific information contemplated by the schedules in the Construction Agreement.

Initially there will be no separate connection charge payable by the User to T&S Co. It is envisaged that any User Works (i.e. those within the boundary of the User Facility) will be carried out by the User at its own costs and other works (the T&S Co Works) will be carried out by T&S Co at its own cost.

While the Construction Agreement provides for the payment of liquidated damages where either Party is delayed in carrying out the Works, the liquidated damages have been set at zero for Users entering in Construction Agreements during the First Regulatory Period under the T&S Co's Licence<sup>32</sup>. The Construction Agreement also provides for a Longstop Date for both the T&S Co and the User. Where Schedule 7 applies (see below) the Longstop Dates are to be set by reference to the T&S Co's Licence and the User's emitter revenue support contract (where applicable).

It is acknowledged that for Users joining a new T&S Network that is still being constructed and commissioned, the construction and commissioning of the Works required to connect the User Facility to the T&S Network are closely linked to the commissioning of the T&S Network itself. Therefore, Schedule 7 is intended to apply in this situation and is intended to allow the User and T&S Co to set out the activities and responsibilities of T&S Co and the relevant Users in relation to the commissioning of the relevant T&S Network and T&S Co Works and the interface with the commissioning of the User Facility and the User Works. It sets out drafting

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<sup>32</sup> The First Regulatory Period under the T&S Co's Licence will be different for individual T&S Networks.

instructions for the processes of notification of delay, responsibilities for costs of rescheduling of activities and responsibilities under the T&S Network Commissioning Plan.

**Question**

**26. Is the proposed structure and content of the Construction Agreement appropriate?**

## Exhibit C: Connection Agreement

T&S Co will also enter into a Connection Agreement with each User in relation to the connection of the User Facility at the Delivery Point and the User's rights to deliver CO<sub>2</sub> at the Delivery Point. The Connection Agreement is the document that will include all User-specific details relating to the User, the User Facility and the User's Delivery Point.

As mentioned above, in order to maintain the greatest extent of uniformity, so that all Users are offered use of the T&S Network on the same terms, the Code will include a template Connection Agreement. This template will not be amended, except to the extent that User-specific information needs to be included in it. Moreover, it is intended that the Connection Agreement should be a concise document, given that most issues are addressed in the main body of the Code.

**Question**

**27. Is the proposed structure and content of the Connection Agreement appropriate?**

## Exhibit D: CDS Accession Agreement

Exhibit D sets out the HoTs for the CDS Accession Agreement. The initial T&S Co will enter into the CDS Contract, appointing the CDS. Any subsequent T&S Co will accede to the CDS Contract by signing a CDS Accession Agreement.

**Question**

**28. Is the CDS Accession Agreement adequate?**

# Consultation questions

- 1. Do you agree with the approach to Code governance as set out in the Heads of Terms?**
- 2. Do you agree that the approach set out affords appropriate pathways for Users and prospective Users to obtain a new or modified connection, either with or without UK government support being sought?**
- 3. Do you agree with the proposals set out in Section D?**
- 4. Do you agree with the proposed approach to Registered Capacity?**
- 5. Would an approach that allowed aggregate Registered Capacity to be greater than Obligated Network Capacity be beneficial, and would the associated risk be manageable for early projects?**
- 6. Do you agree that the proposed approach to Nominations and Renominations will support efficient and responsive operation of a cluster, balancing the needs of both Users and T&S Co?**
- 7. Do you have any information or evidence that would support calibration of the “material” and “persistent” thresholds used to assess deviation between actual flows and Nominations?**
- 8. Do you agree with the pro rata approach being a fair and equitable default mechanism to manage constraints within the network (noting the exceptions listed above)?**
- 9. Do you consider that the process and timelines proposed for maintenance are acceptable?**
- 10. Do you have any feedback on the proposed approach the Code will take to CO<sub>2</sub> metering? Please provide justification in your answer.**
- 11. Are the proposed CO<sub>2</sub> specifications and measurement requirements appropriate?**
- 12. Is the proposed approach on the CO<sub>2</sub> Re-use Service appropriate?**
- 13. Is the proposed approach on Industrial Procedures (including the list of proposed Industrial Procedures and the Terms of Reference for each) adequate?**
- 14. How should the proposed Terms of Reference for each listed Industrial Procedure be further developed ahead of the Code being implemented, to ensure sufficient and relevant detail?**
- 15. Do you agree with the proposed charging structure, Charges and associated definitions?**
- 16. Do you agree with the use of a Mutualisation Cap to limit Users’ exposure to mutualisation?**
- 17. Do you agree with the proposed calculation of the Mutualisation Cap?**



- 18. Are the proposals on invoicing and payment appropriate?**
- 19. How far in advance of the Commercial Operations Date should the Draft Data Annexures be developed?**
- 20. Are the wider data provisions appropriate?**
- 21. Is the proposed CDS proportionate to meeting the minimum requirements of managing the delivery of public funding?**
- 22. Do you agree with the scope of financial liability which is allowed for in Section J of the Code?**
- 23. Do you agree that financial liability between Users and T&S Co should be driven by the concepts of property damage and third-party liability as they exist in law, rather than allowing for any agreement to be made directly between the Parties?**
- 24. Are you supportive of the liability caps proposed above? If not, please explain your reasoning, with supporting technical documentation where possible.**
- 25. Is the proposed Code Accession Agreement adequate?**
- 26. Is the proposed structure and content of the Construction Agreement appropriate?**
- 27. Is the proposed structure and content of the Connection Agreement Appropriate?**
- 28. Is the CDS Accession Agreement adequate?**

# Appendices

## Appendix 1

This section provides an illustrative example of the calculation and application of the Flow Charge, Capacity Charge, and Proportionate Network Charge elements of the Onshore Charge for three separate Users of a stylised Onshore Transportation System in 2030.

The following example does not include the application of mutualisation to Users' Onshore Charges. Within this example, mutualisation would be further applied using the Mutualised Network Charge subject to the Mutualisation Cap to recover as much of the remaining Allowed Revenue as possible from Users.<sup>33</sup> Note: values subject to rounding.

This illustrative example is also set out in the accompanying Excel file and has been extended to include mutualisation.

**Table 1: Illustrative Allowed Revenue in 2030**

Allowed Revenue building blocks	Unit	Value
Opex - variable	£m	19.00
Opex - fixed	£m	70.00
Sinking fund (decommissioning/monitoring)	£m	5.00
Depreciation	£m	102.01
RAB return	£m	10.20
Tax recovered	£m	8.05
Allowable Revenue Total	£m	214.26

**Table 2: Illustrative User network parameters in 2030**

Illustrative User parameters	Unit	User A	User B	User C
CO <sub>2</sub> projected to be injected in 2030	Mt	1.00	1.00	1.80
Booked capacity for 2030	Mt/hour	0.00042	0.00042	0.00021
Delivery Point Size	Mt/hour	0.00042	0.00050	0.00021

<sup>33</sup> If there is any Allowed Revenue that is not expected to be collected after mutualisation, the remaining Allowed Revenue will be collected through the Revenue Support Agreement

**Table 3: Illustrative Flow Charge calculation for 2030**

Flow Charge Rate	Unit	Value		
A - Opex - variable	£m	19.00		
B - Total CO <sub>2</sub> injected in 2030	Mt	3.80		
Flow Charge Rate (A/B)	£/t CO <sub>2</sub>	5.00		
Flow Charge	Unit	User A	User B	User C
C - CO <sub>2</sub> injected in 2030	Mt	1.00	1.00	1.80
D - Flow Charge Rate	£/t CO <sub>2</sub>	5.00	5.00	5.00
User Flow Charge (C*D)	£m	5.00	5.00	9.00

**Table 4: Illustrative Capacity Charge calculation for 2030**

Capacity Charge Rate	Unit	Value		
A - Depreciation	£m	102.01		
B - RAB return	£m	10.20		
C - Capacity of network, i.e., smallest communal pipe	Mt/hour	0.00125		
Capacity Charge Rate ((A+B)/C/hours per year)	£/t CO <sub>2</sub> / hour	10.25		
Capacity Charge	Unit	User A	User B	User C
D - Booked capacity for 2030	Mt/hour	0.00042	0.00042	0.00021
E - Capacity Charge Rate	£/t CO <sub>2</sub> / hour	10.25	10.25	10.25
F - Hours per year	hour	8,760	8,760	8,760
Capacity Charge (D*E*F)	£m	37.40	37.40	18.70

**Table 5: Illustrative Proportionate Network Charge calculation for 2030 (excluding mutualisation)**

Proportionate Network Charge Rate (ex-mutualisation)	Unit	Value
A - Elements of Allowed Revenue not covered by the Flow Charge and Capacity Charge	£m	83.05

B - Capacity of network	Mt/hour	0.00125		
Proportionate Network Charge Rate ((A/B/hours per year)	£/t CO <sub>2</sub> / hour	7.58		
<b>Network Charge (ex-mutualisation)</b>	<b>Unit</b>	<b>User A</b>	<b>User B</b>	<b>User C</b>
C - Delivery Point Size	Mt/hour	0.00042	0.00050	0.00021
D - Proportionate Network Charge Rate	£/t CO <sub>2</sub> / hour	7.58	7.58	7.58
E - Hours per year	hour	8,760	8,760	8,760
Proportionate Network Charge (C*D*E)*	£m	27.68	33.22	13.84

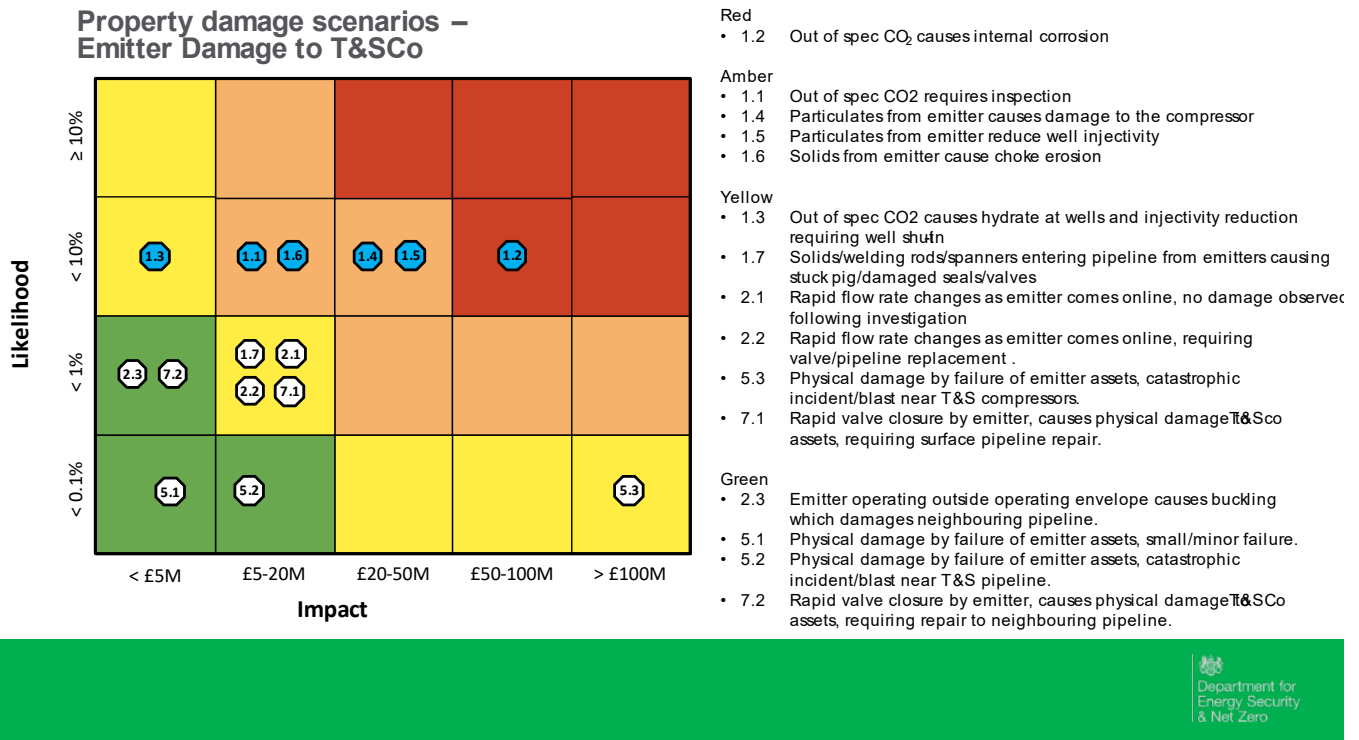
**Table 6: Requirement for further mutualisation in 2030**

<b>Mutualisation requirement</b>	<b>Unit</b>	<b>Value</b>
Total Charges collected pre mutualisation (2030)	£m	187.26
Total Allowed Revenue (2030)	£m	214.26
Remaining Allowed Revenue to be collected via Mutualised Network Charge subject to the Mutualisation Cap	£m	27.01

## Appendix 2

This section provides the full results of the internal property damage scenario assessment which was conducted in order to set the caps on insurable liabilities between Users and T&S Co, as set out in Section J.

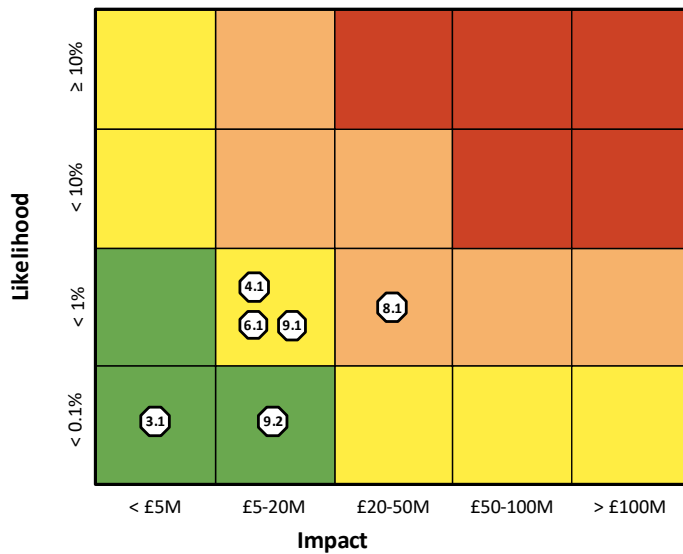
In order to set the liability caps above, government has conducted an internal exercise to shortlist a representative range of potential property damage scenarios, assigning each scenario a likelihood and impact rating on the basis of professional judgment. The results of this exercise are shown below, capturing scenarios of damage caused by Users to T&S Co assets and vice versa respectively:



**Figure 2: Property Damage Scenarios – User to T&S Co**

In relation to damage from Users to the T&S Co, it should be noted that scenarios 1.1-1.6 (shown in blue on the diagram) relate to damage from off-spec CO<sub>2</sub> entering the T&S Network. Elsewhere in the Code, government has made clear that responsibility for management of the CO<sub>2</sub> specification should be shared between Users and T&S Co; as such, it was deemed inappropriate for the liability cap to allow the T&S Co full coverage against property damage in this case. Additionally, scenario 5.3 was discounted on the basis that it would cause a disproportionate inflation of the RWC, given its low level of likelihood. Discounting these scenarios leaves a residual RWC of £20m, which is reflected in the relevant liability cap.

**Property damage scenarios – T&S Co Damage to Emitter**



- Amber**
  - 8.1 Rapid valve closure by T&S Co, causes physical damage to emitter assets requiring repair.
- Yellow**
  - 4.1 Physical damage caused by failure of T&S Co assets in the vicinity of emitter, repair of emitter assets.
  - 6.1 Failure of T&S operational control causing overpressure in emitter pipework, repair of connections flanges/seals.
  - 9.1 Physical damage due to T&S vehicle incident at emitter site, repair major piece of emitter equipment.
- Green**
  - 3.1 Failure of metering due to damage caused by T&S Co staff, repair/replace meter.
  - 9.2 Physical damage due to error while offloading from T&S vehicle, requiring vessel replacement.



**Figure 3: Property Damage Scenarios – T&S Co to User**

In relation to damage from the T&S Co to Users, a strong view has been conveyed by project developers that scenario 8.1 could be mitigated by prudent design choices on the part of the Users. Discounting scenario 8.1 left a residual RWC of £20m, which again is reflected in the proposed liability cap.

Finally, in order to arrive at the proposed cap on liability of the T&S Co to multiple Users, a proposal of £100m was made on the basis that many of the scenarios identified could affect multiple Users simultaneously, and that increasing the individual cap by a factor of five is broadly representative of the expected number of Users which will connect to an early T&S Network.

The data contained in Figures 2 and 3 above is reproduced below for the purposes of accessibility.

**Table 7: Property Damage Scenarios – User to T&S Co**

Scenario	Likelihood	Impact
1.1 Out of spec CO <sub>2</sub> requires inspection	<10%	£5m-20m
1.2 Out of spec CO <sub>2</sub> causes internal corrosion	<10%	£50m-100m
1.3 Out of spec CO <sub>2</sub> causes hydrate at wells and injectivity reduction requiring well shut-in	<10%	<£5m
1.4 Particulates from User causes damage to the compressor	<10%	£20m-50m

1.5	Particulates from User reduce well injectivity	<10%	£20m-50m
1.6	Solids from User cause choke erosion	<10%	£5m-20m
1.7	Solids/welding rods/spanners entering pipeline from Users causing stuck pig/damaged seals/valves	<1%	£5m-20m
2.1	Rapid flow rate changes as User comes online, no damage observed following investigation	<1%	£5m-20m
2.2	Rapid flow rate changes as User comes online, requiring valve/pipeline replacement	<1%	£5m-20m
2.3	User operating outside operating envelope causes buckling which damages neighbouring pipeline.	<1%	<£5m
5.1	Physical damage by failure of User assets, small/minor failure.	<0.1%	<£5m
5.2	Physical damage by failure of User assets, catastrophic incident/blast near T&S pipeline.	<0.1%	£5m-20m
5.3	Physical damage by failure of User assets, catastrophic incident/blast near T&S compressors.	<0.1%	>£100m
7.1	Rapid valve closure by User, causes physical damage to T&S Co assets, requiring surface pipeline repair.	<1%	£5m-20m
7.2	Rapid valve closure by User, causes physical damage to T&S Co assets, requiring repair to neighbouring pipeline.	<0.1%	<£5m

**Table 8: Property Damage Scenarios – T&S Co to User**

Scenario	Likelihood	Impact
3.1 Failure of metering due to damage caused by T&S Co staff, repair/replace meter.	<0.1%	<£5m
4.1 Physical damage caused by failure of T&S Co assets in the vicinity of User, repair of emitter assets.	<1%	£5m-20m
6.1 Failure of T&S operational control causing overpressure in User pipework, repair of connections flanges/seals	<1%	£5m-20m
8.1 Rapid valve closure by T&S Co, causes physical damage to User assets requiring repair.	<1%	£20m-50m
9.1 Physical damage due to T&S vehicle incident at User site, repair major piece of User equipment.	<1%	£5m-20m

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9.2 Physical damage due to error while offloading from T&S vehicle, requiring vessel replacement	<0.1%	£5m-20m
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This consultation is available from: [www.gov.uk/government/consultations/carbon-capture-and-storage-ccs-network-code-updated-heads-of-terms](https://www.gov.uk/government/consultations/carbon-capture-and-storage-ccs-network-code-updated-heads-of-terms)

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