National Grid Gas Transmission (NGGT) Gas Quality Consultation Questions - Draft

Existing NTS Entry Connections

1. Do you expect the number of requests by existing NTS entry parties to amend gas quality limits in their Network Entry Agreements (NEAs) that are within Gas Safety (Management) Regulations (GS(M)R) limits but outside GTYS limits to increase in the coming years? Please provide your rationale.

2. Do you believe that NGGT's current method of assessment for individual NEA parameter changes is appropriate? If not, how could our approach be improved?

3. Which of the NEA change options detailed in section 8.0 for individual limit parameters do you prefer and why? Are there other options that should be considered?

New NTS Entry Connections

4. Do you believe that the process of agreeing gas quality limit parameters for new NTS entry connections requires reform? If so, what changes do you suggest?

5. Do you consider that the demand for new NTS entry connections to deviate from GTYS gas quality limits will grow in the future? If so, please provide your rationale.

Generic Questions

6. Where NGGT's ability to agree to higher gas quality limits is limited, e.g. a higher limit could be agreed at one NTS entry point but not more widely due to an impact at NTS exit point(s), how should NGGT manage and allocate the available flexibility?

7. Do you support further consideration of NGGT providing gas quality services to process / blend at NTS entry points or do you believe that the responsibility to deliver compliant gas should continue to rest with upstream parties?

8. If your business is adversely affected by variations in gas quality, how could NGGT help you to manage those issues? (Note: at this stage we are unable to publish real-time gas quality data measured at entry points to the NTS).

9. Is there a case to treat smaller NTS entry connections that Project CLoCC seeks to facilitate differently to larger coastal terminals in respect of gas quality limits / processing and blending services?

10. The GTYS limit for oxygen is 200 times more stringent than that required by GS(M)R (10ppm compared to 2000ppm). Do you anticipate any adverse consequences if 2000ppm were to become the industry standard?

2.0 Current GB Gas Quality Management Arrangements

The legal limits for UK gas quality are set out in Schedule 3 of the Gas Safety (Management) Regulations 1996. In addition, NGGT publishes a supplementary indicative specification in Appendix 2 of the annual Gas Ten Year Statement (GTYS) which covers the GS(M)R parameters and certain others, such as carbon dioxide. Parameters for each NTS sub-terminal that delivers gas into the NTS are set out in Network Entry Agreements (NEAs) between NGGT and each sub-terminal operator. There are a few sub-terminals which do not have a NEA with NGGT and which operate on the basis of the gas quality limits that were in place in respect of that location the inception of Network Code in 1996.

The GS(M)R sets out the technical specification for gas quality in the UK and establishes a legal obligation on UK gas transporters not to transport gas that does not comply with it. NGGT is therefore unable to agree to any relaxation of these requirements. The GS(M)R are in process of being reviewed and in respect of the gas quality parameters, the current focus is on whether the upper limit for Wobbe Index could be increased from its current level of 51.41 MJ/m^3 to 53.25 MJ/m^3.

Current responsibilities for NTS gas quality management may be summarised as:

- NTS entry sub-terminal operators are required under the NEAs to physically deliver gas to NGGT that is within the parameters applicable to their particular sub-terminal. Any processing or blending of gases to achieve compliance at the point of entry on each incoming pipeline is therefore the responsibility of that party.

- Shippers are responsible under the UNC for delivering compliant gas to the NTS. Since the NEAs define what 'compliant' means in respect of each sub-terminal, in practice, this obligation is discharged by each sub-terminal operator on behalf of the shipper.

- NGGT is responsible for only conveying gas that complies with the requirements of GS(M)R. In the event that non-compliant gas is presented for delivery at a sub-terminal, NGGT implements its Transportation Flow Advice (TFA) process to notify the terminal operator of the non-compliant flow and curtail its supply if the situation is not promptly remedied.

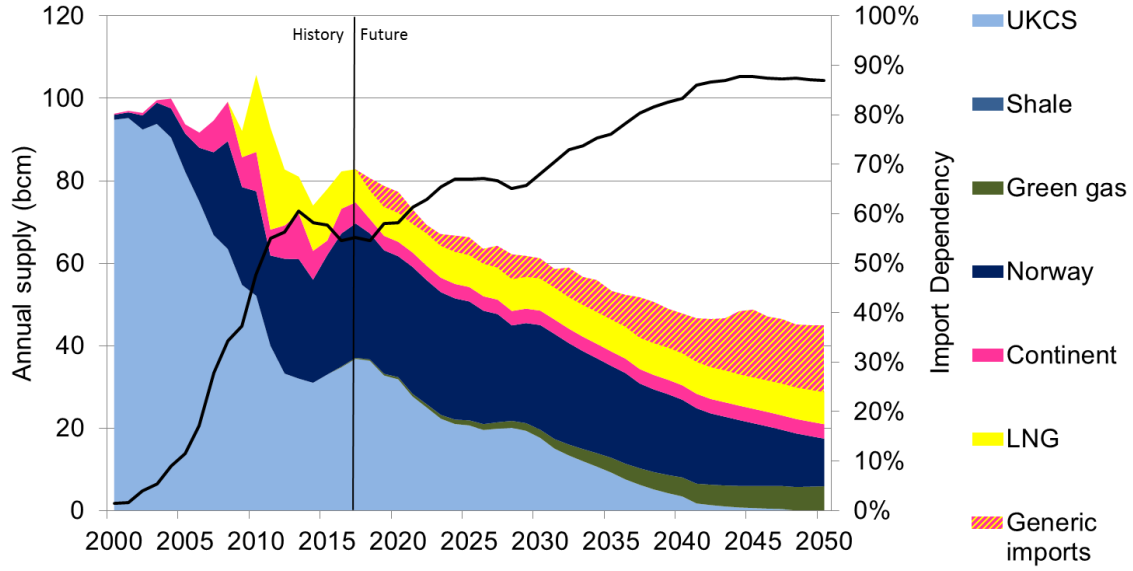
At some NTS entry points, gas from different terminal operators comingles within the NGGT terminal before entering the NTS pipelines that convey the gas away. However, at present, NGGT does not use such infrastructure to provide any active gas quality processing or blending services; each terminal operator is required to comply with the specification applicable to that entry point on its incoming pipeline.

3.0 Changing NTS Supplies

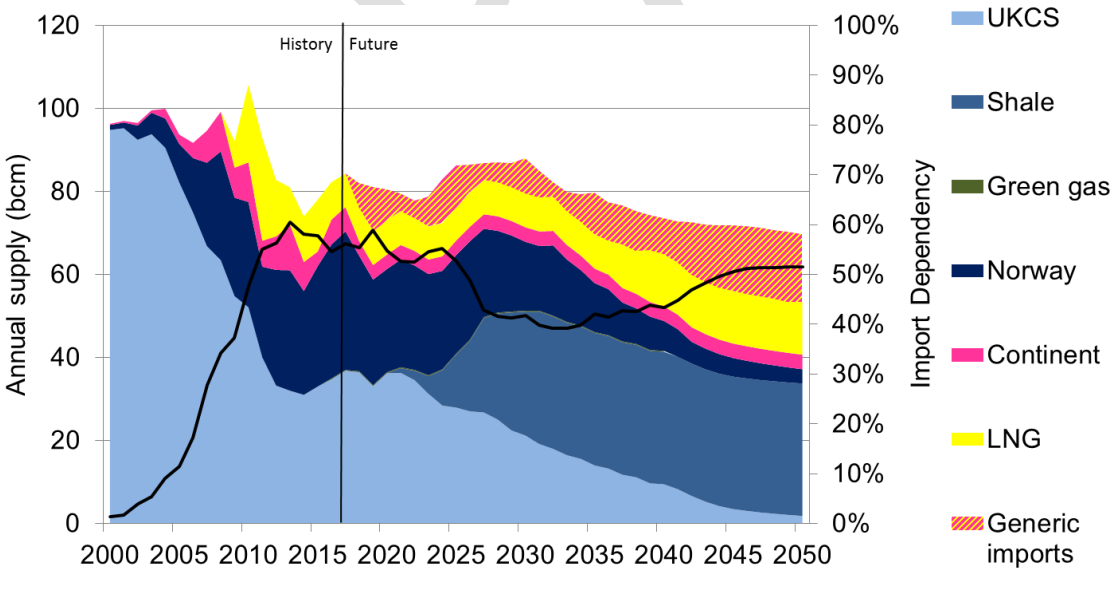
GB's import dependency has grown substantially in the past 15 years as UKCS supplies have declined from 95bcm in 2000 to 35bcm in 2016. Although the UKCS has enjoyed a brief renaissance in recent years, we expect this trend to continue with the shortfall being made up with gas from Norway, continental Europe and LNG. Other indigenous sources of shale gas, biomethane and bio-substitute

natural gas may be further developed, which NGGT's Project CLoCC aims to facilitate from October 2018, although in three out of our four Future Energy Scenarios, imported gas will become even more important.

Annual supply pattern in 'Two Degrees' Scenario



Annual Supply Pattern in 'Consumer Power' Scenario



Source: Future Energy Scenarios, National Grid, July 2017

Against this backdrop, following on from the Wood Report[1] and the establishment of the Oil and Gas Authority, the government's Maximising Economic Recovery Strategy for the UK was published in 2015, whose central obligation is that "Relevant persons must, in the exercise of their relevant functions, take the steps necessary to secure that the maximum value of economically recoverable petroleum is recovered from the strata beneath relevant UK waters."

What NGGT is keen to understand is:

- What these future change drivers may mean for gas quality; in particular, whether requests to deliver legally compliant gas into the NTS with limits outside our current GTYS parameters are likely to increase;
- The adequacy of current processes going forward in managing such requests for new and existing NTS entry connections;
- Industry preferences for how available gas quality flexibility should be allocated by NGGT where that flexibility is scarce; and
- Potential demand for NGGT to play an enhanced role in facilitating additional gas being brought to market through the provision of gas processing / blending services.

4.0 Current Change Process for Existing NTS Entry Connections

Shippers have a UNC obligation to deliver compliant gas to the NTS; yet it is the NEAs that NGGT has in place with sub-terminal operators that define what 'compliant' means at each NTS entry point as that is where the technical parameters are defined. Therefore, the current change process needs to encompass both NGGT contractual relationships with shippers through the UNC and an NEA change with the relevant sub-terminal operator.

This is normally achieved by a UNC party raising a UNC modification proposal to change an existing agreement. The alternative is for NGGT to obtain the written consent of all shippers holding NTS entry capacity at the relevant ASEP but the UNC modification is usually the more practical and transparent route. Approval of the UNC modification provides the required industry consent for NGGT to make the NEA amendment with the relevant sub-terminal operator.

NGGT's current preference is that any such UNC modification would, if approved, incorporate the varied parameter into the UNC such that the revised limit would be available to all existing and potential customers, subject to agreement between the relevant operator and NGGT[2]. However, given the wider potential impact of raising a change in this way, industry parties have typically preferred to raise the change proposal only in respect of their specific NTS entry point.

5.0 Recent UNC Gas Quality Modifications

[1] 'UKCS Maximising Recovery Review: Final Report', February 2014

[2] This was done with UNC Mod 0049 'Optional Limits for Inert Gases at System Entry Points' which allowed NGGT to agree a carbon dioxide limit of up to 2.5mol% with any sub-terminal operator that requested such a change.

A number of recent UNC modifications have proposed changes at individual entry points that are within GS(M)R limits but are outside the GTYS limits. These are:

Modification	Nature of Proposal	Date Raised	Status
0498 - Amendment to Gas Quality NTS Entry Specification at BP Teesside System Entry Point	Increase the CO2 limit at BP Teesside from 2.9mol% to 4.0%	4 April 2014	Implemented on 25 September 2015, enabling the NEA change from 1 October 2020.
0502 – Amendment to the Gas Quality NTS Entry Specification at the px Teesside System Entry Point	Increase the CO2 limit at px Teesside from 2.9mol% to 4.0%	3 June 2015	Implemented on 25 September 2015, enabling the NEA change from 1 October 2020.
0561S – Amendment to the oxygen limit within the BBL /NGG Interconnection Agreement	Increase BBL oxygen limit from 10ppm to 200ppm	2 October 2015	Implemented from 11 December 2015
0581S – Amending the oxygen content limit specified in the Network Entry Agreements at Grain LNG	Increase the oxygen limit at Grain from 10ppm to 200ppm	8 April 2016	Implemented with effect from 12 August 2016
0607S – Amendment to Gas Quality NTS Entry Specification at the St Fergus NSMP System Entry Point	Increase the NSMP St Fergus CO_2 limit from 4.0mol% to 5.5mol%	15 December 2016	Live modification, in Workgroup development

6.0 Current Process – New NTS Entry Connections

For a new NTS entry connection, NGGT agrees the gas quality specification bilaterally as part of the NEA development. There is no formal process for consulting shippers; effectively NGGT assumes that the limits agreed are acceptable both to the operator and to the shipper(s) that will be delivering gas into the NTS at that location.

7.0 Current NGGT Approach Towards GTYS Specification Deviation Requests

When assessing these requests, our current approach includes investigating any impact on NTS asset integrity and our ability to continue to meet safety, legislative, regulatory and existing contractual obligations.

We may be able to accommodate individual amendments at particular entry points but could not do so more widely. This issue has arisen during the development of UNC Mod 0607S where our network modelling has shown that acceptance of 5.5mol% CO2 at the NSMP terminal at St Fergus would not materially affect our ability to meet our contractual obligation to make gas available within the CO_2 offtake specification at Bacton to IUK, but this ability could be compromised if other entry parties were to seek increases to their CO_2 limits at other locations.

Therefore, applying a 'first come first served' approach could result in NGGT refusing any such future requests and then being open to challenge on its Gas Act and Licence obligations to avoid any undue preference or undue discrimination in the terms on which it undertakes conveyance of gas and avoid conferring any unfair commercial advantage on any industry party.

At the time of writing, NGGT and the proposer of Modification 0607S are seeking a contractual solution to this issue to allow NGGT the ability to revoke the higher limit in the event that such flexibility becomes scarce. However such a resolution brings uncertainty and risk for the proposer and some shippers argue that this could set an undesirable precedent for future.

8.0 Options for Facilitating Change

1) **Status Quo**. The current arrangements have worked effectively where NGGT has not faced a constraint on its ability to offer an amended limit at all other locations. However, where our ability to accommodate an increased limit is scarce, we are concerned about the potential for a future discrimination claim if another party makes a similar request that we refuse. A number of measures to address this have been discussed in the Mod 0607S workgroup; time-limiting the provision of flexibility, demonstration of ongoing need by the requesting party and providing NGGT with a right to reduce or revoke the increased limit if other requests were to be made that could not otherwise be accommodated. We are interested in customer views on the appropriateness of these measures, recognising that a NGGT right to reduce an elevated limit has the disadvantage of not giving the upstream party certainty.

2) **Window for other requests** - Under the PARCA process, NGGT opens a window of time each year in which market participants may signal demand for the reservation of NTS capacity. This concept could be extended to gas quality changes where NGGT receives a request to deviate from a GTYS limit that could not be accommodated at all locations. If no other parties came forward then NGGT could proceed to make the requested change, it being apparent that, at that time, no other party wished to access such flexibility. If further requests were to be made during such a window then these could be assessed on an equivalent basis by NGGT with a view to sharing the available flexibility on a non-discriminatory basis.

3) **Lowest Common Denominator** – This option would permit gas quality changes to be made only where such a change could be accommodated by NGGT at all entry points. It would enable NGGT to comply with its obligation not to discriminate but could also lock gas out, particularly for the smaller-scale NTS connections that Project CLoCC seeks to facilitate.

9.0 NGGT Gas Quality Services

NGGT wishes to take the opportunity in this consultation to seek feedback on how market participants may be affected by variations in the gas quality that they receive from the NTS and what NGGT may be able to do to help manage those issues. NGGT has consulted on this topic previously

and discovered that, for example, CCGT operators face a risk of their power station tripping if the calorific value / Wobbe Index of the gas offtaken is subject to fluctuation. This led to a number of requests for NGGT to publish real-time gas quality information at entry points to the NTS. NGGT investigated this but concluded that it is not viable at this stage due to the cost and complexity of systems changes that would be required and other existing system change priorities. Nevertheless, NGGT is keen to explore what else could be done in this area that would be of value to stakeholders.

NGGT is also interested in the extent of any demand to utilise its existing infrastructure or build new plant to provide blending / processing services to allow an upstream operator to deliver out of specification gas at the custody transfer point where NGGT would bring it into compliance before it entered the NTS pipeline(s). This would effectively move the point of compliance for operators further downstream and could allow for relaxations in NEA gas quality specifications outside the GS(M)R ranges as well as GTYS since NGGT would be responsible for treating or blending the gas with other sources to be GS(M)R compliant.

10.0 Questions for consultation

The specific questions that we are seeking responses to are as follows:

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Appendix 1: National Grid Gas Ten Year Statement Gas Quality Limits

[insert]

Appendix 2: GS(M)R Parameters

[insert]