

Guidance

RIIO-2 Exit Capacity Planning Guidance Version 1.0

Publication date: 19 March 2021

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This document contains the Exit Capacity Planning Guidance (“ECPG” or “the Guidance”), with which licensees are required to comply under Standard Special Condition A57, introduced as part of the RIIO-2 gas transmission and gas distribution price control.

This document is for the gas transmission and gas distribution licensees, and interested stakeholders, who want to know about the requirements for the exit capacity booking process.

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Context

Ofgem is the Office of Gas and Electricity Markets, which regulates the electricity and gas industries in Great Britain. Our principal duty is to protect the interests of existing and future gas and electricity consumers. Consumers' interests are taken as a whole, including their interests in the reduction of greenhouse gases and in the security of the supply, and in the fulfilment of relevant statutory objectives when we are carrying out our functions as the gas and electricity regulator of Great Britain.

We work in various ways to protect the interests of consumers and one way in we do so is by regulating the network companies through price controls. We set price controls to specify the services and level of performance that the network companies must provide for users and consumers and to restrict the amount of money that the network companies can recover through network charges over the length of a price control period.

1. Introduction

Background

1.1. In December 2020 we published our RIIO-2 Final Determinations¹ for the transmission and gas distribution price controls. These set out the key elements of the price control from 1 April 2021 to 31 March 2026. This included a new licence obligation for the gas transporter licence holders to comply with an enhanced obligations framework in relation to the exit capacity booking process.

1.2. In order for Gas Distribution Networks (“GDNs”) to offtake gas from the National Transmission System (“NTS”), they need to book exit capacity from National Grid Gas Transmission (“NGGT”), which gives them the right to access gas from the transmission network in the future. Current regulatory arrangements allow the GDNs to pass these costs on to consumers, and in RIIO-GD1 a financial incentive rewarded GDNs for being efficient in their capacity bookings. This incentive has now been removed, and consequently this enhanced obligations framework has been introduced to ensure that these costs continue to be efficient.

The Exit Capacity Planning Guidance

1.3. Standard Special Licence Condition (“SSC”) A57 (Exit Capacity Planning) of the gas transporter licences requires the licence holder (“licensee”) to comply with the Exit Capacity Planning Guidance (“the Guidance”). This document constitutes the Guidance document referred to in SSC A57 and may be amended and updated in accordance with the process described in SSC A57.

1.4. In this document we use the terms, “Ofgem” and “the Authority” as well as the terms “we”, “us” and “our” interchangeably. Ofgem is the Office of the Gas and Electricity Markets. The Authority is the Gas and Electricity Markets Authority and is the governing body of Ofgem, consisting of non-executive and executive members.

¹ <https://www.ofgem.gov.uk/publications-and-updates/riio-2-final-determinations-transmission-and-gas-distribution-network-companies-and-electricity-system-operator>

1.5. Unless otherwise indicated in this Guidance, capitalised words are defined terms with the same meaning given to them as in the gas transporter licence.

1.6. The term “NTS exit capacity” (lower case) refers to a combination of NTS Exit Capacity and Assured Offtake Pressures².

Compliance

1.7. The licensee is required to comply with this Guidance when planning and managing its NTS exit capacity booking process..

Review

1.8. Ofgem may from time to time, following consultation with the GDNs, NGGT and other interested parties, revise this Guidance document in accordance with the SSC A57.

Confidentiality

1.9. In order to either:

- protect the anonymity of consumers and information relevant to the protection of Critical National Infrastructure³ (“CNI”), or
- comply with the disclosure restrictions of Section 105 of the Utilities Act 2000

information that must be provided to the Authority or any other party in accordance with the requirements of this document may be provided in a suitably anonymised or redacted form. However where the communication of such information in non-

² The products that GDNs can make use of are:

- a) NTS Exit Capacity comprising:
 - a. NTS Exit (Flat) capacity – the right to flow a volume of gas over a gas day. Defined in UNC TPD B1.2.3(C)(i) and referred to in this document as “Flat”; and
 - b. NTS Exit (Flex) capacity – the right to vary the rate of offtake over the course of a gas day. Defined in UNC TPD B1.2.3(C)(ii) and referred to in this document as “Flex”.
- b) Assured Offtake Pressure (AOP) – the right to require a minimum pressure is provided by NGGT. Defined in UNC TPD J5 and referred to in this document as AOP.

³ What constitutes CNIs is defined by the Centre for the Protection of National Infrastructure.

anonymised form would improve the efficiency of consequential exit capacity bookings, we expect non-disclosure arrangements between networks could be used to protect relevant information. Nothing in this Guidance compels any network company to reveal information which could be prejudicial to the protection of CNI.

2. General instructions and requirements

Purpose of the Guidance

2.1. The purpose of the Guidance is to ensure that:

- the licensee has in place processes and undertakes activities for the purpose of managing its NTS exit capacity planning and makes reasonable endeavours to ensure that its booking process is efficient, for all the parties involved.
- there is no loss of efficiency in the booking of NTS Exit Capacity as a result of removing the RIIO-GD1 incentive, and that all aspects of the booking process are managed in a way that is to the benefit of the gas transportation network as a whole.

2.2. The Guidance should therefore, at the least, result in GDNs booking a level of NTS exit capacity that effectively and efficiently provides for their 1-in-20 demand forecast for current and future years as signalled via NTS exit capacity bookings and other data shared via this process.

2.3. In order to ensure that networks are sufficiently sized, it is important that bookings are accurate on a long-term basis, and so for any long-term forecast of peak day demand we would expect a commensurate booking of NTS Exit Capacity. Where the booking differs from the forecast, this should be clearly identified and explained by the GDN in the annual report described in Part 3.C of this document. In the event that subsequent forecasts result in a reduced requirement for capacity, we would anticipate that the commensurate NTS exit capacity booking is also reduced – allowing the capacity to be made available for other users.

Structure of the Guidance

2.4. The ECPG comprises a set of requirements relating to the following areas of capacity booking activity:

- Methodology: GDNs must provide information on the structure of their networks⁴, and both GDNs and NGGT must provide information on their forecasts of demand and the details of the processes in place to calculate these forecasts.
- Engagement: the GDNs and NGGT must collaboratively work with each other and with other stakeholders to maximise booking efficiency across the gas transportation network as a whole.
- Reporting: licensees must report annually to the Authority on capacity booking methodology, stakeholder engagement, decision-making and data to demonstrate efficient booking outcomes.

Transition Arrangements

2.5. This Guidance comes into effect on 1st April 2021. In order to allow licensees to amend their processes to comply with this Guidance, we are providing the following transition arrangements that will apply until the end of October 2021:

1. GDNs and NGGT are not required to publish the methodologies used for the 2021 booking cycle⁵, as described in Part 3.A. However, they should make reasonable endeavours to ensure that the methodologies employed reflect the requirements set out in this Guidance;
2. GDNs and NGGT should develop scenarios and forecasts as described in paragraphs 3.5, 3.13 – 3.16 and 3.20.
3. GDNs (either individually or jointly) should agree with NGGT by 15th April 2021 on the process for engagement in that booking cycle. As part of this, they should agree on

⁴Known as Network Topology and as defined in Appendix 1.

⁵ The booking cycle runs from February through to September each year.

what information (including that described in point 2 above, and in paragraphs 3.11 and 3.12) should be provided as part of the engagement process, and the timescales for doing so. They should work in good faith to accommodate the needs of other parties with respect to the information each party needs for efficient Exit Capacity planning where these would not create a disproportionate burden.

4. GDNs should publish on their websites their Network Topologies for the 2021 booking cycle by 30th April 2021.
5. The reports described in Part C of this Guidance should include a description of any significant changes in booking patterns compared to the previous year, and an explanation of how these deliver an efficient outcome. The phrase “with reference to the methodology statement” in paragraph 3.36 should be ignored.

During this transition period, we expect licensees to work with a view to setting up their processes in line with this Guidance.

3. Detailed requirements

A: Methodology

GDNs

Summary

3.1. For GDNs, the methodology obligations comprise:

- Publication of a methodology statement, setting out the process used to assess the requirements for NTS exit capacity, as set out in paragraphs 3.2 to 3.6.
- Publication of the GDN Network Topologies, as set out in paragraphs 3.7 to 3.9.
- Provision of pre-forecast information to NGGT, as set out in paragraphs 3.10 to 3.12.
- Publication of 1-in-20 peak day and other forecasts per individual Network Topology, as set out in paragraphs 3.13 to 3.16.

Each of these obligations is described in further detail below.

Methodology statements

3.2. GDNs must publish a methodology statement which sets out how they assess information and forecast requirements. The statement should detail the end-to-end process and should include the process steps listed in Table 1. Guidance is provided on the information that should be provided as part of each process step.

Table 1: GDN methodology process steps

Process Step	Description/Guidance
Collection and processing of actual demand data	This should include the collection of data for the pre-forecast information supplied to NGGT, as set out in paragraphs 3.10 to 3.12
Customer engagement and data collection	This should specify data collected and/or sought from 3rd parties (connected consumers, network users, local authorities, Independent Gas Transporters ,

	etc.), the reasons for collection of this data and an explanation as to how it impacts their forecasting process
Population of network analysis and other models	This should include details of: <ol style="list-style-type: none"> 1. network analysis and planning methodologies/assumptions 2. requirements (for network analysis and for anything else in the end-to-end process) stemming from the Safety Case 3. the software used 4. the flow equations and other parameters used
Load and demand forecasting	This should include: <ol style="list-style-type: none"> 1. a description of the statistical models, parameter choices, historical data set and, underlying assumptionsthat have been used, with reference to British Gas TD76⁶ (or its successors pursuant to the Uniform Network Code (UNC)), and setting out the precise interpretation of Standard Special Condition A9 (in particular with regards to within day gas flow variation); 2. an explanation of how different scenarios are generated/accommodated (GDP growth, etc., interaction with NGGT’s Future Energy Scenarios (FES) scenarios)

3.3. The methodology statement should set out:

- how specific considerations for each network structure are taken into account (including listing/specifying those considerations). This could include unique

⁶ The TD76 code of practice sets out a temperature/demand methodology for distribution network planning purposes.

characteristics of the network, and the behaviours of specific loads (where confidentiality allows).

- how commercial solutions (eg interruptible contracts) are assessed (for example, with references to volumes, tendering processes, or market testing).
 - how network investment solutions (eg new pipelines) are assessed (for example, with references to identification, optioneering and cost-benefit analyses, and to integration with wider network investment (replex, maintenance outage, reliability, etc.)).
 - how trade-offs between commercial solutions, investments or other actions (e.g. increased bookings) are identified and assessed, including the identification of a baseline counterfactual situation against which other scenarios or options can be assessed (see also below, “specification of scenarios”).
 - how the analysis leads to and is translated into the production of offtake-level capacity and pressure requirements.
 - how the degree of substitutability between products (Flat, Flex and AOP) and offtakes is investigated/ascertained
 - how risks and uncertainties are managed (including identifying the risks and sources of uncertainty). In particular, this should describe the management of risks relating to:
 - i. information accuracy
 - ii. loss of baseline NTS capacity as a result of substitution or other mechanisms
 - iii. the future availability of NTS Flex and AOP products
 - how previous forecasts are considered (eg by integrating learning points within within the forecasting process).
 - how the process is controlled, audited, documented, changed.
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3.4. The methodology statement should set out how the process for assessing booking requirements investigates, inter alia:

- whether the AOP for year T-4 can be reduced, and identify the requirements for facilitating a reduction, including considering what additional Flex requirements would be needed to enable a reduction in AOP, noting risks above;
- whether AOP, Flat and/or Flex bookings for years T-3, T-2, and T-1 can be reduced (which we would expect to be linked to any reduction in 1-in-20 demand forecasts for those years), noting risks above; and
- the cost implications of different (T-4) capacity booking patterns.

3.5. The methodology statement should set out the different scenarios⁷ that are established by the GDN. These should include:

- A baseline scenario, based on the assumption that an increase of capacity or pressure at any particular NTS Offtake (“offtake”), from T-3 levels is not available in T-4 (with the exception of proportionally fixed increases in NTS exit (Flat) capacity reflecting a corresponding increase in 1-in-20 forecast).
- Other scenarios, specifically in respect of alternative offtake capacity booking patterns, generated to facilitate the discovery of efficient outcomes. These should be specified so as to cover a range of forecasts of the optionality in offtake booking patterns (including the balance between offtakes, and the balance between different capacity products – i.e. Flat, Flex and AOP).
- Any additional scenarios specified so as to cover a range of forecasts of demand, with reference to variables such as:
 - decarbonisation vectors (degree of electrification, hydrogen adoption, district heating, energy efficiency etc.);

⁷ “Scenarios” in this context is intended to enable the examination of relatively small differences (e.g. offtake booking patterns within the same overall LDZ demand) as well as larger changes (e.g. akin to the differences between FES scenarios).

- economic growth rates; and
- factors such as consumer behaviour (impacting within-day demand patterns).

3.6. The scenarios should make reference to the FES generated by NGGT. The consistency between the GDN's demand scenarios and FES should be examined and adequately explained.

Provision of the GDN network structure

3.7. GDNs must produce information regarding their Network Topologies, as described in Appendix 1. This should set out for each offtake whether it serves a Single NTS Feed Distribution Network Structure or a Multiple NTS Feed Distribution Network Structure⁸. Subject to CNI restrictions, Network Topology information must be published on the licensee's website. Where it cannot be published it must be provided to NGGT and Ofgem, again subject to CNI restrictions.

3.8. The Network Topology should also state, for each offtake, whether the predominant form of control of offtake is pressure control or flow control, the design flow rates (maximum and minimum), and the maximum downstream pressure.

3.9. GDNs must provide an annual update to NGGT setting out:

- Any changes to any Network Topology that have occurred in the past year.
- Any anticipated changes to physical infrastructure and/or gas flow, which would affect the choice of offtakes comprised in a Network Topology.

Provision of pre-forecast information

3.10. Under UNC OAD Section H⁹, GDNs are required to provide the following data to NGGT:

⁸ The definition of these terms is set out in Appendix 1.

⁹ Uniform Network Code – Offtake Arrangements Document – Section H sets out requirements for long term demand forecasting.

- actual consumption and LDZ shrinkage, weather corrected, segregated to load bands, and adjusted for reconciliation;
- new loads and number of loads, appropriately segregated;
- details of loads >58.6 GWh/year (2m therms/year) connected or expected to connect, and any expected changes;

3.11. In addition to the elements listed in UNC OAD Section H, GDNs must identify all specific loads above 58.6 GWh/year and any significant loads below 58.6 GWh/year to enable forecasting.

3.12. GDNs must also provide details of the current status of all new connection enquiries for specific loads above 0.1 mcmd, including any financial commitment made by connectees or network users. This data should be allocated to the relevant Network Topology. In cases where a GDN's ability to publish this data is constrained by confidentiality obligations, GDNs should publish anonymised data or non-confidential summaries.

Publication of 1-in-20 and other forecasts

3.13. GDNs must publish details of their 1-in-20 peak demand forecasts, at the level of GDN Network Topology where possible. Where this is not possible because of CNI restrictions, the information must be provided to NGGT, Ofgem and, where relevant, any other GDN, to the extent allowed by these restrictions.

3.14. 1-in-20 peak demand forecasts should be accompanied with associated forecasts, such as the outputs from their storage simulation model¹⁰ and any corresponding or closely-related assumptions (e.g. GDP growth, impacts of climate change, assumptions on calorific value, forecasted change to consumer behaviour).

3.15. GDNs should publish the Forecast Offtake Information specified in the UNC, including (but not necessarily limited to):

¹⁰ A storage simulation model identifies the peak storage requirements using historic demand and weather patterns.]

- for each specified day (1 in 20 peak, day 13 severe, day 46 average, day 150 average and day 300 average);
- daily volume flows, peak flow rate, and offtake flexibility quantity.

This must be published per Network Topology.

3.16. In addition, GDNs should provide their assumed minimum pressure, at the inlet to each offtake, for 0600 and 2200, for each demand level .

NGGT

Summary

3.17. For NGGT, the methodology obligations comprise:

- Methodology statement - Publication of the methodology used to assess GDNs' capacity bookings
- Publication of 1-in-20 peak day and other forecasts - per LDZ or individual Network Topology

Methodology statement

3.18. NGGT must publish the methodology used for the assessment of information provided by GDNs in respect of future capacity (Flat and Flex) and AOP bookings, the methodology used to determine the impacts of proposed bookings (on NGGT, NGGT consumers, GDN, GDN consumers, and any other party or groupings of parties), and the decision criteria for accepting or rejecting requests for capacity (Flat and Flex) and AOP bookings. In particular, and taking note of the GDNs' interpretation of Standard Special Condition A9 as set out in its methodology statement, where the aggregate of GDNs' Flat requirements exceeds NGGT's equivalent 1-in-20 forecasts, this methodology should state how NGGT reconcile their 1-in-20 forecast to GDNs' 1-in-20 forecasts.

3.19. The obligation to publish the methodology is additional to and reliant on any other obligations regarding the production, publication, and maintenance of associated documents,

in particular the Transmission Planning Code¹¹, Demand Forecasting Methodology¹², and Exit Capacity Release Methodology Statement¹³.

Publication of 1-in-20 and other forecasts

3.20. For each GDN NGGT should publish its own forecasts of:

- 1-in-20 peak day demand,
- annual consumption,
- daily and monthly demand profiles and load duration curves for numerous demand levels, and
- details regarding any significant loads connected or expected to be connected to the GDN, including but not limited to new loads over 58.6 GWh/year;

(each as specified in the UNC).

It is recognised that at the date of this document that NGGT is unable to produce these per individual Network Topology, but is able to produce these per LDZ. NGGT should use reasonable endeavours to produce these forecasts per individual Network Topology, but until this is possible should produce them by LDZ.

3.21. It is recognised that the application of diversity when GDN demands are considered by NGGT for planning its network means that their demand forecast may be lower than the forecasts produced by the GDN.

Methodology publications

¹¹ This refers to the document of that name described in NGGT's Gas Transporter Licence

¹² This refers to the document of that name published by NGGT to provide a general overview of the methodology used to calculate peak day demand forecasts and load duration curves.

¹³ This refers to the document of that name described in NGGT's Gas Transporter Licence

3.22. The GDNs and NGGT may publish their methodologies individually or as part of a combined document. Methodology documents must be reviewed and consulted on with industry annually. Finalised methodology documents, with an accompanying consultation report (to be provided as a separate document), must be provided to Ofgem before the end of January, and Ofgem may request further information and direct a GDN to review any part or parts of its methodology. Any such changes may be required to become effective prior to the booking of any capacity/pressure by the GDN. GDNs and NGGT should also publish their finalised methodology documents on their websites by the end of January.

3.23. All methodologies should state what confidentiality restrictions apply to data that may need to be shared under the obligations. They should describe what measures (such as the anonymisation of specific data, or the signing of confidentiality agreements) would be necessary to allow third parties to act as observers at meetings between GDNs and NGGT (see Engagement section below).

B: Engagement

3.24. Each network must use reasonable endeavours to achieve the identification of the efficient booking of NTS exit capacity, including, inter alia, the timely engagement with other entities as contemplated below.

3.25. Under the engagement obligations, licensees are expected to:

- Work collaboratively with other licensees to establish the booking pattern that maximises efficiency
- Enter into dialogue with other relevant (connected) networks to establish efficient levels of booking for AOP, Flat and Flex (or other products facilitated by UNC).

3.26. The engagement obligations comprise requirements for both bilateral and multilateral meetings between GDNs and NGGT, and for a process relating to these to be put in place.

Meetings

Bilateral meetings

3.27. Each GDN must meet with NGGT at least once a year, to discuss developments on both networks that could impact on:

- the GDNs' requirements for pressure and capacity;
- the ability of NGGT to provide these requirements, including changes to NTS capacity baselines and constraint management activity; and
- NTS capacity baselines.

3.28. The purpose of these meetings is to help generate efficient NTS exit capacity bookings by GDNs, but also to provide an opportunity to consider a holistic assessment of wider network capability requirements.

3.29. All such meetings should be notified to Ofgem and the organisers should allow Ofgem to attend as an observer.

Multi-lateral meetings

3.30. GDNs and NGGT must use their best endeavours to work together, to establish timely multi-lateral meetings to identify, where there are interactions between different GDNs' requirements, the efficient allocation of NTS exit capacity bookings across the relevant networks and the identification of associated costs.

3.31. All such meetings should be notified to Ofgem and the organisers should allow Ofgem to attend as an observer.

Third parties

3.32. Where they can demonstrate good reason to be involved and where it would not be prejudicial to the outcome of the meetings, third parties should be allowed to attend the meetings as observers, subject to any confidentiality requirements set out in the methodologies.

3.33. Where satisfied that the meetings cannot operate effectively with third party observers, a network should inform Ofgem of this fact. In this circumstance, Ofgem retains the right to require that third parties be allowed to attend.

Annual Process

3.34. Each GDN and NGGT must jointly have in place a process for annual engagement with one another. At a minimum, this should include the following steps (including any requirements on timing):

- Each GDN and NGGT should arrange an initial engagement meeting to discuss:
 - changes in forecasts (both GDN & NGGT) and the inclusion of new connectees/loads (e.g. biomethane connections, peaking-power generators, direct connects (PARCAs¹⁴));
 - high level options for accommodating these changes within the GDN's NTS exit capacity bookings;
 - the possible impacts on GDN and NGGT, and magnitude of possible impacts; and
 - whether there is any requirement for co-ordination with other GDNs.
- The GDN should propose quantified options on offtake booking patterns.
- NGGT should provide a concise reasoned opinion as to which of the proposed offtake booking patterns is the least costly option for the NTS, and an indication of the magnitude (in capex and opex terms) of the difference in cost between the options¹⁵;
- On the basis of NGGT's reasoned opinion on NTS costs, and its own information regarding the costs on its networks, the GDN should decide which option is to be booked; and

¹⁴ A Planning & Advanced Reservation of Capacity Agreement (PARCA) is a contract between National Grid and a customer, allowing capacity to be reserved for the customer while they develop initial phases of their own project.

¹⁵ This is anticipated to take the form of an informal commentary, along with estimated magnitudes of impact, that compares the impact of the alternatives presented by the GDN. We anticipate that this will comprise one or two short paragraphs with a table indicating ranges of capital or operational costs for the baseline and any less impacting alternative.

- NGGT will allocate capacity (Flat and Flex) and AOPs. NGGT will retain the ability to reject requests for Flex or AOPs. We would expect that any such rejection will have already been anticipated in the reasoned opinion.

Further requirements

3.35. The engagement process may identify changes that are needed to the existing Exit Capacity Release Methodology Statement, UNC and other documentation in order to facilitate and accommodate changes to capacity and pressure booking..Where this is the case, these should be progressed by the relevant party.

C: Reporting

GDNs

3.36. GDNs must publish, by 31st October each year, a report detailing the outcomes of the application of the methodologies. The intent of the report is to provide transparency and auditability relating to the decisions being made. The report will constitute at least three parts:

- Analysis – detailing the conclusions of the forecasting process, and the options identified to accommodate the scenario forecasts within each GDN's network;
- Interaction with other networks – detailing the interaction between networks, and the consequences other networks have identified with the options each GDN has identified;
- Final outcomes – including the actual NTS exit capacity bookings derived, and a full explanation of the decisions made, with reference to the methodology statement

3.37. The report will contain, at a minimum:

- justifications for any difference to the NGGT 1-in-20 forecast(s);
- a full description of options identified;
- the reasoned opinion(s) received from NGGT;

- the detailed analysis of options following reasoned opinion and any other supporting analysis/communication;
- the GDN decision(s).

3.38. The report should clearly articulate, explain and justify decisions made, therefore demonstrating the efficiency (as considered across the entire gas transportation network) of the final decisions (i.e. the pressure and capacity bookings).

3.39. In respect of the scenarios examined, the report should include discussion of the consequences, including exposition of the relativity of costs and benefits between them, of the various scenarios in terms of impact on capex, opex, risk and compliance.

3.40. The report should provide a clear explanation and justification, with appropriate quantification of any increases in pressure requirements and/or capacity bookings, of not reducing these elements where there is a reduction in 1-in-20 forecasts.

3.41. A joint report may be published by any combination of network companies.

3.42. A draft report may be published prior to the 31st October.

NGGT

3.43. NGGT must publish, by 31st October each year, a report setting out, at a minimum:

- how the GDNs' NTS exit capacity bookings have informed its assessment of NTS capacity;
- how the GDNs' NTS exit capacity bookings have increased (or decreased) NGGT's risks and NGGT's costs;
- the need for any additional investment or other costs.
- the allocations (of Flat, Flex, and AOP) made at each GDN offtake.

3.44. The report should clearly explain and justify any decisions made in relation to the points above. NGGT will retain an ongoing duty to inform the industry (including GDNs), as

soon as possible, of potential substitutions following PARCA application, as set out in Special Condition 9.13.4.

3.45. Until such time as NGGT is able to produce forecasts at a Network Topology level (as described in paragraph 3.20), its report should include an update on progress made towards this goal.

Appendix 1: Network Topologies

1. The Guidance requires the provision or publication of Network Topology (paragraph 3.7). The GDNs will need to publish the topological make up of their network, specifically indicating the physically continuous parts of the network where there is a reasonable degree of substitutability between NTS offtakes. This allows a more granular forecast of demand to be produced by GDNs and NGGT under peak conditions, including any details that may limit the degree of substitutability (e.g. offtake capacities). If this topology is different during off-peak conditions, the differences in peak and off-peak topology should be clearly articulated. This allows parties to more closely understand the interdependencies across offtakes and to identify pass-through requirements (i.e. at single feed demand areas).
2. We anticipate that some NTS offtakes serve demand that cannot be otherwise supplied. At these offtakes, GDNs have no effective choice about the level of NTS exit capacity they book, as it is purely a reflection of underlying 1-in-20 peak day demand forecasts in the relevant area. We have termed this situation as a “Single NTS Feed Distribution Network Structure”.
3. For other parts of a LDZ, there will be some degree of interconnection between NTS offtakes downstream of the offtake. We recognise that some instances of interconnection are stronger than others. For example, the downstream interconnectivity could be provided by a high-pressure transmission pipeline, or a lower pressure distribution main. Also, proximity to the offtakes may be a factor, for example one offtake may be interconnected by high-pressure transmission pipeline to another, although very far away from the centre of demand, thereby limiting the degree of substitutability. GDNs will need to establish and publish these structures. We have termed this situation a “Multiple NTS Feed Distribution Network Structure”.
4. The term “Network Topology” refers to an individual Network Topology which comprises either a Single NTS Feed Distribution Network Structure or a Multiple NTS Feed Distribution Network Structure.
5. A GDN, which may comprise one or more LDZs, will therefore be associated with one or more Network Topologies. A Multiple NTS Feed Distribution Network Structure may comprise offtakes that span more than one LDZ.

6. We recognise that the choice of category (single or multiple offtake) requires expert judgement to accommodate the complexity of network flow characteristics, and may also involve the use of confidential information. We anticipate that where expert judgement has been applied which limits the degree of substitutability (for example if a network structure is deemed for all practical purposes to be a single NTS feed network structure even though technically it is not) that the reasoning for the choice of network structure is justified by the GDN.