

# E1 - NETWORK GAS SUPPLY EMERGENCY PROCEDURE

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A detailed report indicating changes to this document from its previous version (11) is available on the [NGSE pages](#) of the National Gas website

## Foreword

This E1 Network Gas Supply Emergency (NGSE) Procedure is produced and maintained by National Gas Transmission plc. The procedure determines the processes which the Primary Transporter (National Gas Transmission) will follow in the management of an NGSE, whether potential or actual, as obligated by the Network Emergency Coordinator (NEC) Safety Case.

This Procedure will be issued by the Primary Transporter to all Users, upon request, to enable them to understand the stages of an NGSE and the planned emergency steps contained therein, as per Paragraph 1.3, Uniform Network Code - Transportation Principal Document - Section Q - Emergencies.

Further information can be requested via [.boxgasops.emergencyplanning@nationalgas.com](mailto:boxgasops.emergencyplanning@nationalgas.com) or by following this link [Network Gas Supply Emergencies \(NGSE\)](#)

Compliance with this document does not confer immunity from prosecution for breach of statutory or other legal obligations.

The arrangements described in this document take effect from June 2024.

This document supersedes Issue 11.0 which was issued in October 2023.

## Disclaimer

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## Mandatory And Non-Mandatory Requirements

In this document:

**Must:** indicates a mandatory requirement.

**Should:** indicates best practice and is the preferred option. If an alternative method is used, then a suitable and sufficient risk assessment must be completed to show that the alternative method delivers the same, or better level of protection.

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# INTRODUCTION

E1 is the procedure used for managing a Network Gas Supply Emergency (NGSE) prepared in accordance with the Network Emergency Coordinator's Safety Case. Each Gas Transporter will use this document to formulate a suitable internal response plan, entitled, 'E3 Network Gas Supply Emergency Plan'. Local Gas Supply Emergency procedures are managed by Gas Distribution Network operators, entitled, 'E2 Local Gas Supply Emergency Procedure' but are not linked to this procedure.

Gas Safety (Management) Regulations 1996 (GS(M)R) defines a supply emergency as "an emergency endangering persons and arising from a loss of pressure in a network or any part thereof".

The NEC Safety Case defines an NGSE as a potential, or actual, supply emergency on the Primary System (National Transmission System) managed by the Primary Transporter.

GS(M)R further identifies emergency falling into two types, namely:

- a) Insufficient gas supplies available to the Primary System (Gas Deficit).
  - a. Gas Deficit Emergency (GDE) – Insufficient supplies available to the Primary System.
  - b. Safety Monitor Breach (SMB) – where there is, or may be, insufficient gas storage available to meet the winter demand conditions.
  
- b) A Critical Transportation Constraint (CTC) on the Primary System.
  - a. This may occur when there is sufficient gas available but due to a constraint on the Primary System, the gas cannot be transported to the correct location.

To provide a measured, appropriate, and co-ordinated response to an NGSE, the NEC Safety Case defines four stages of an emergency.

This procedure provides further information on these emergency stages as well as details on the prioritisation of consumers, communication routes in an emergency and the formation of the emergency strategy. The procedure also provides a summary of the roles and responsibilities of the NEC and the Primary Transporter.

Definitions used throughout this procedure can be found in the [Glossary](#).

# SCOPE

This procedure is designed to provide a consistent approach for management of an NGSE. It is aligned with the current NEC Safety Case and should be used when all normal operational tools available to the Primary Transporter have failed to rectify a potential gas supply emergency.

# PURPOSE

The purpose of this procedure is to provide a measured, appropriate, and co-ordinated response to an NGSE and to meet all the requirements of Section 4 (Network Gas Supply Emergency) of the current NEC Safety Case. As a supply emergency cannot occur on the Primary System if the Network

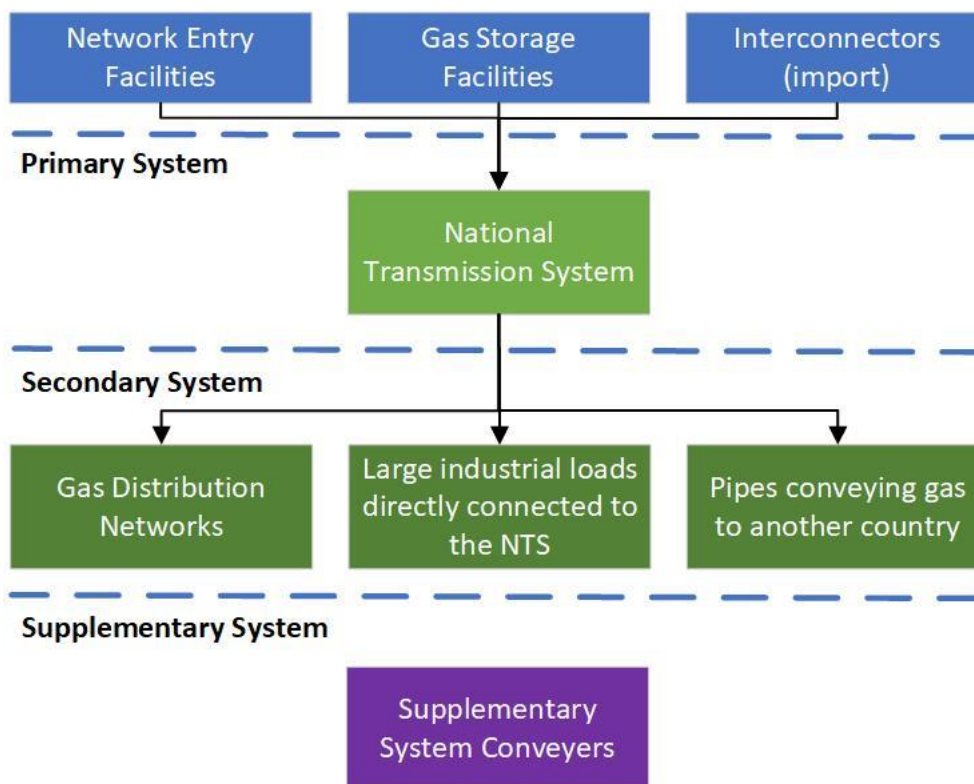
is fully pressurised, this procedure outlines the measures designed to keep the Network fully pressurised for as long as possible. This is achieved by maximising gas supplies that are available to the Primary Transporter using normal commercial arrangements, and using emergency measures, including load shedding, to match supply and demand on the Network.

## PART 1 – THE NETWORK

The NEC Safety Case identifies that the Network consists of three types of system, specifically Primary, Secondary, and Supplementary.

This classification enables the NEC to clearly differentiate between the roles of the various conveyors operating on the Network and those involved in identifying a potential, or actual, supply emergency. The Network is summarised in Figure 1.

Figure 1: The Network



### 1.1 PRIMARY SYSTEM

The Primary System (National Transmission System (NTS)) transports gas from the gas processing facilities, storage facilities and interconnectors to all Secondary Systems. In most cases, the Primary System is the main source of gas for Secondary Systems. The Primary Transporter operates the Primary System.

The Primary Transporter’s National Control Centre (NCC) is responsible for the continuous monitoring and control of the physical network, always ensuring its safe operation. In addition, it undertakes the application of commercial activities associated with the Uniform Network Code (UNC).

## 1.2 SECONDARY SYSTEMS

A system taking gas from the Primary System, via offtakes, is classified as a Secondary System. Secondary Systems include large directly connected industrial and commercial loads, and Gas Distribution Networks (GDN) which supply domestic and non-domestic end users.

Secondary System conveyors have arrangements in place for monitoring the operation of their systems.

Also included in the definition of Secondary Systems, are Interconnectors when they are exporting gas from Great Britain. When exporting gas from Great Britain's GS(M)R Network, the pipes colloquially named 'Interconnectors' are defined by Figure 1 of the GS(M)R Guidance on Regulations publication as 'Pipes conveying gas to another country'. Figure 1 further defines these 'pipes' as part of the GS(M)R Network. This means they are subject to the duty to cooperate with the NEC and may be issued demand reduction notices in line with the NGSE strategy.

## 1.3 SUPPLEMENTARY SYSTEMS

Supplementary Systems take gas from Secondary Systems and supply domestic and/or non-domestic end users. Supplementary System conveyors have arrangements in place for monitoring the operation of their systems.

## 1.4 SUPPLIES TO THE PRIMARY SYSTEM

### 1.4.1 NETWORK ENTRY FACILITIES

The facilities which deliver gas to the Primary System as solely entry facilities, comprise the following types:

- **Gas Terminals**

Gas terminals receiving gas from onshore and offshore gas production facilities are classed as gas processing facilities, under Regulation 2(1) of GS(M)R, and therefore have a duty to cooperate with the NEC under Regulation 6(1) of GS(M)R.

- **LNG Terminals**

LNG importation terminals are classified as gas processing facilities, under Regulation 2(1) of GS(M)R and therefore have a duty to cooperate with the NEC under Regulation 6(1) of GS(M)R.

- **Biomethane Production Facilities**

Biomethane production facilities are classified as gas production facilities, under Regulation 2(1) of GS(M)R and therefore have a duty to cooperate with the NEC under Regulation 6(1) of GS(M)R.

### 1.4.2 GAS STORAGE FACILITIES

Gas Storage Facilities are connected to the Primary System and can operate in two modes, injection (NTS exit) or withdrawal (NTS entry). Under Regulation 6(1) of GS(M)R, Storage Facilities have a

duty to cooperate with the NEC. Gas is held in some or all of these facilities to meet the requirements of Operating Margins and Safety Monitor gas.

### **1.4.3 INTERCONNECTORS (import)**

There are two interconnector pipelines connected to the Primary System which can physically convey gas to Great Britain from another country. These are:

- a) Interconnector from Belgium (Interconnector)
- b) Interconnector from the Netherlands (BBL)

If a potential, or actual, supply emergency has been identified, the NEC can request, via the Primary Transporter, the co-operation of the Interconnector Operators to manage the response. However, Figure 1 of the GS(M)R Guidance on Regulations publication, determines that when an Interconnector is conveying gas from another country, it is not part of the GS(M)R Network and therefore is not subject to NEC Directions, specifically in this circumstance the direction to maximise flows. The ability to increase supplies, via this type of supply point, is therefore limited to commercial incentive.



# PART 2 – NGSE MANAGEMENT PRINCIPLES

## 2.1 NORMAL NETWORK OPERATION

In normal operation of the Network, the Shippers are incentivised to provide sufficient gas to the Primary System to meet the demand of their supply points daily. The NCC continuously monitors the balance between supply and demand on the Primary System. NCC has a number of commercial and physical tools to assure this balance, including its role as the residual balancer to the ‘On-the-day Commodity Market’ (OCM) for gas. Under all normal conditions, this must produce a balance between supply and demand in the Primary System.

However, there are exceptional conditions that could result in an imbalance between supply and demand in the Primary System, or in part of the Primary System, which cannot be corrected using normal commercial arrangements; this imbalance may lead to an NGSE.

## 2.2 OPERATING MARGINS

NGT purchases Operating Margins (OM) annually, in line with both the requirements of Uniform Network Code - Transportation Principal Document – Section K – Operating Margins, and obligations described in the NGT Safety Case, in respect of the NTS. This Safety Case places an obligation on NGT to maintain OM at levels and locations determined throughout the year.

The OM arrangement is used to maintain primary system pressures in the period before other system management services become effective (e.g., national, or locational balancing actions). This arrangement ensures that normal market operation can be maintained by allowing time for the market to deliver additional supply where possible.

Primarily, OM will be used in the immediate period following the occurrence of any of the following circumstances, if all other system operator actions are insufficient:

- Supply loss: terminal, sub-terminal, interconnector, LNG importation terminal
- Pipe break (including loss of infrastructure that renders pipe unusable)
- Compressor failure
- Demand forecast error

A further quantity of OM is also procured to manage the orderly run-down of the system in the event of an NGSE while load shedding takes place.

## 2.3 SAFETY MONITOR GAS

Gas shippers and suppliers are incentivised in accordance with their licences to take steps to secure gas supplies to satisfy the domestic supply security standard. This includes the 1:50 severe winter demand for their domestic end users. All conveyors need to demonstrate the arrangements they have in place to minimise the risk of a supply emergency occurring.

A Safety Monitor is required by GS(M)R to provide sufficient gas in storage to support those gas consumers whose premises cannot be physically and verifiably isolated from the gas network within a reasonable time period. To achieve this, all gas consumers are categorised into one of two groups:

- **Protected-by-Monitor**

Gas is held in storage to facilitate continuity of supply to these consumers even in a 1:50 severe winter

- **Protected-by-Isolation**

Network safety would be maintained, if necessary, by physically isolating these customers from the network

The Safety Monitor has two components. These are the ‘storage deliverability’ and ‘storage space’ Safety Monitors:

- The ‘storage deliverability’ Safety Monitor indicates the minimum level of deliverability required to both safely isolate loads that are ‘Protected-by-Isolation’ and also support loads that are ‘Protected-by-Monitor’. The deliverability Safety Monitor is therefore providing operational cover should an NGSE be declared on any particular day
- The ‘storage space’ Safety Monitor provides sufficient gas in store to support ‘Protected-by-Monitor’ loads for the remainder of the winter.

Should end users classified as ‘Protected-by-Isolation’ not respond to a request to cease using gas, the conveyors will need to demonstrate that they can physically isolate them in a timely fashion. All end users not classified as ‘Protected-by-Isolation’ are classified as ‘Protected-by-Monitor’.

The Primary Transporter determines the quantity of Safety Monitor gas. The Safety Monitor gas includes gas for ‘Protected-by-Monitor’ end users and gas required to maintain adequate pressure to ‘Protected-by-Monitor’ end users when ‘Protected-by-Isolation’ end users are being isolated from the Network.

The Primary Transporter monitors storage levels to ensure there is no breach of Safety Monitor levels. The NEC will be notified in the event of a potential or actual breach of the Safety Monitor as this may lead to a potential, or actual, gas supply emergency developing.

## 2.4 CLASSIFICATIONS OF AN NGSE

An NGSE could be caused by insufficient gas supplies available to the Primary System, or a constraint in the ability to successfully transport gas to Primary System offtakes at the minimum pressure required.

### 2.4.1 Insufficient Supplies (Gas Deficit)

Insufficient supplies to the Primary System are split into two separate types of emergency classification:

- A) **Gas Deficit Emergency** - Insufficient supplies are available to the Primary System across all Network Entry Facilities. This could occur due to a sudden event, or it could develop

slowly over several hours or days. The foreseeable events resulting in insufficient supplies being available are:

- i. Failure of the NCC, or the systems that support the NCC in monitoring and controlling the Primary System
- ii. The complete, or partial, failure of the UNC market regime arrangements for delivering gas to the Network, including failure to nominate sufficient gas and incorrect network demand estimation
- iii. Shortage of gas at network entry facilities due to one or more sources of gas being outside the gas quality criteria set out in GS(M)R Part I and/or Part II of Schedule 3
- iv. Shortage of storage gas at one or more storage facilities
- v. A prolonged period of exceptionally cold weather causing gas demand to exceed the supply security criteria
- vi. Unplanned unavailability, or capacity restriction, of one or more network entry facility
- vii. Unplanned unavailability, or capacity restriction, at one or more storage facility
- viii. Unplanned unavailability, or capacity restriction, of production facilities or associated pipelines due to plant or pipeline failure, industrial action, natural disasters, severe weather, accident, acts of war or sabotage, etc.

B) **Safety Monitor Breach** - where there is, or may be, insufficient gas storage available to meet the winter demand conditions. The foreseeable events resulting in a safety monitor breach are:

- i. Shortage of storage gas at one or more storage facility to the extent that the Safety Monitor is breached
- ii. A prolonged period of exceptionally cold weather causing gas demand to exceed the supply security criteria leading to storage stock to be utilised beyond annual forecasts
- iii. Unplanned unavailability, or capacity restriction, at one or more storage facility, leading to a reduction in deliverability of Safety Monitor gas, or Safety Monitor gas having no entry route to the Primary System

#### 2.4.2 Critical Transportation Constraint (CTC)

A CTC may occur when there is sufficient gas available nationally but, due to a constraint on the Primary System, the gas cannot be transported to the correct location at the required pressure. A CTC emergency will exist when the Primary and Secondary Transporters have taken appropriate operational actions and put into effect all practicable measures to reconfigure the Network but, despite these actions, a restriction on the Primary System prevents, or has the potential to prevent, the Secondary Transporter from supplying gas safely to its customers.

The foreseeable events that could result in a CTC in the Primary System are:

- i. Reduction in the maximum permitted operating pressure of a Primary System pipeline, e.g., due to third party damage

- ii. The need to isolate part of the Primary System due to the admittance of gas which does not meet the requirements of GS(M)R Part I or Part II of Schedule 3
- iii. Unplanned unavailability due to pipeline or system plant failure, industrial action, natural disasters, severe weather, accident, and acts of war or sabotage of Primary System pipelines. Planned pipeline and plant outage is considered by the Primary Transporter in the scheduling process
- iv. Unplanned unavailability, or capacity restriction, at one or more storage facility

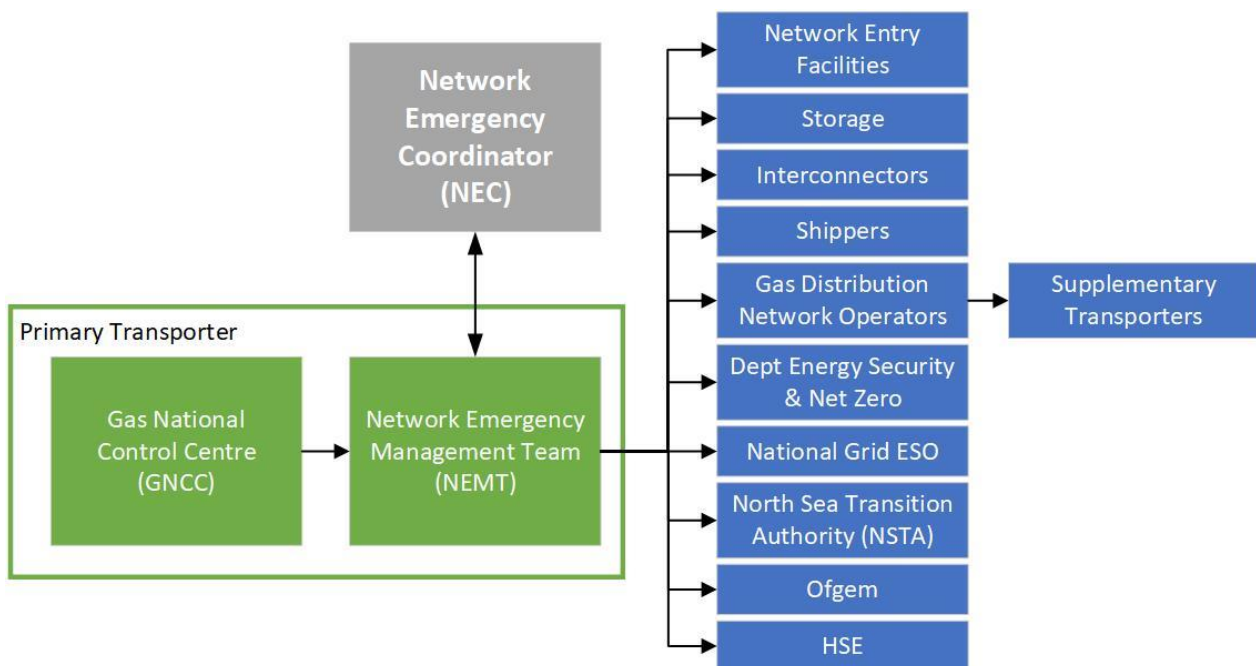
## 2.5 NGSE COMMUNICATIONS

The notification routes for the declaration of an NGSE, and the notice of a potential NGSE are shown schematically in Figure 2.

All communication routes are two-way and must maintain, as far as possible, the normal communication processes taking place between the various parties during the normal operation of the Network.

Parties must avoid bypassing the communication chain in an attempt to deal directly with the NEC or the Primary Transporter.

**Figure 2: Communication route used for NEC Declarations**



Every person with a duty to cooperate with the NEC must have a means of receiving notifications from the Primary Transporter in the form of a 24-hour telephone number and another separate 24-hour form of contact. The details required must be provided by the user and must always be kept up to date, as per Paragraph 2.2.1 Uniform Network Code - Transportation Principal Document - Section Q - Emergencies.

The NCC utilises a third-party platform to issue messages, referred to as Active Notification System (ANS) messages, to predetermined groups across the gas industry, including Shippers. ANS messages include Margins Notices and Gas Balancing Notifications. It is also used by the NEMT as

a mass notification distribution system to issue messages to the industry, including NGSE declarations.

## 2.6 NETWORK EMERGENCY MANAGEMENT TEAM (NEMT)

In the event of a potential, or actual NGSE, a Network Emergency Management Team (NEMT) will be mobilised, by the Primary Transporter, led by an Incident Controller, who will manage the incident, develop the emergency strategy, and liaise with the NEC. NGT's E3 Network Gas Supply Emergency Plan sets out the processes of the NEMT.

## 2.7 DEPARTMENT FOR ENERGY SECURITY AND NET ZERO

In a potential, or actual NGSE, the Department for Energy Security and Net Zero (DESNZ) may choose to form their Emergency Response Team (ERT) in accordance with the National Emergency Plan for Downstream Gas and Electricity. The DESNZ ERT will receive information from wider government, National Grid Electricity, National Gas Transmission, GDN's and other relevant gas and electricity industry representatives on the wider impacts of the NGSE. Additional information may be gathered via other sources such as, but not limited to, Ofgem and the Energy Networks Association (ENA). Based on this information, the DESNZ ERT may draw wider actual, or potential, societal impacts arising from the deployment of the response strategy to the attention of the NEMT, which should be considered by the NEMT when determining the emergency strategy.

Should DESNZ consider that changes to the strategy approved by the NEC be required, these changes must be undertaken by the relevant Secretary of State issuing a notice of direction to the relevant party through an Order in Privy Council under the Energy Act 2013.

## 2.8 DISTRIBUTION NETWORK RESPONSE TEAMS

GDNs, in the role as Secondary Transporters, must receive notification of a potential, or actual, NGSE from the NEMT. They should mobilise a response team to enact their own E3 Network Gas Supply Emergency Plans which are aligned to that of the NEMT. The alignment of these procedures sets out how the two parties should share information to allow the NEMT to form the emergency strategy, and how the GDNs must receive NEC directions in order to deploy the NGSE strategy in the Secondary Systems.

## 2.9 NATIONAL ENERGY SYSTEM OPERATOR

The NEMT should engage with the National Energy System Operator (NESO) throughout the response to a potential, or actual, NGSE. This engagement is undertaken with the following objectives:

- To alert NESO to the potential for interruptions to gas fired generators
- To understand, from NESO, the implications on the Electricity System of the response strategy concerning reducing demand from gas fired power generation

- To consider any mitigations which can be undertaken when reductions to gas fired power generation leads to the activation of demand control on the Electricity System
- The NEMT should work with NESO to understand the minimum delivery of gas to gas fired power generators to prevent electricity system instability. The NEMT will then seek approval from the NEC to provide this minimum quantity of gas to those gas fired power generators deemed critical at the time of the emergency.

## PART 3 – EMERGENCY STRATEGY

### 3.1 INFORMATION PROVISION

The following list provides a guide of the information that will be used by the NEMT to develop the emergency strategy for approval by the NEC (this is a non-exhaustive list which does not require to be undertaken sequentially):

- a) Estimates of the Network supply and demand balance
- b) Current and forecasted gas deliveries at the Network Entry Facilities – this can be obtained in conjunction with North Sea Transition Authority (NSTA) via the Gas Availability Status report
- c) Potential maximum gas available at the Network Entry Facilities
- d) Potential volume and location of available gas conforming to GS(M)R Part II of Schedule 3
- e) Current gas deliveries to the Primary System from storage facilities
- f) Potential maximum gas deliverable to the Primary System from storage facilities
- g) Storage stock levels for Primary System and storage facilities
- h) GDN utilisation including minimising flows by way of the use of GDN linepack and storage stocks and available contractual interruption
- i) Location and nature of any capacity constraints being experienced or anticipated by conveyors, network entry facility operators and storage facility operators
- j) The quantity of load identified as ‘Protected by Isolation’
- k) The quantity and location of industrial/commercial loads available for load shedding
- l) The quantity and location of priority load available for load shedding
- m) The quantity and location of domestic demand which may require to be isolated
- n) Volume and location of the storage gas required to maintain Safety Monitor levels

### 3.2 DEVELOPMENT OF THE NGSE STRATEGY

The NEMT will develop an emergency strategy setting out the action necessary to restore the supply-demand balance to the Primary System, or the affected part of the Primary System. This strategy will be submitted to the NEC for approval.

The strategy adopted by the NEMT for the restoration of the supply-demand balance has three aspects:

- a) The quantities of gas available to re-balance the Primary System, or the affected part of the Primary System, at Stages 1 and 2.
- b) The lead times associated with delivering these quantities of gas to the Primary System, or the affected part of the Primary System.

- c) Ability to maintain adequate Safety Monitor storage levels to support ‘Protected-by-Monitor’ consumers throughout winter.

It is possible that enough gas could be available to the Primary System, or the affected part of the Primary System, to restore supply-demand balance but that it could not be delivered in time to prevent failure at one or more Secondary System offtakes.

Failure could occur where the quantity of gas being delivered from the Primary System to a Secondary System is insufficient to meet the immediate demand of that Secondary System (considering the gas stored within the Secondary System and the load management measures in place) resulting in a fall in Secondary System pressure to a level at which supplies to consumers are affected.

The emergency strategy provides a process for the NEMT to match the correct amount of supplies, or demand reduction measures, to address the Primary System imbalance. In estimating the quantities of gas required, a tolerance is necessary to allow for each of the proposed actions not delivering the forecasted results. These tolerances must be stated in the emergency strategy, e.g., LNG delivery must have a high certainty of delivery time and quantity, so may have a low tolerance. Load shedding may be judged to be less certain in delivery time and quantity, therefore, has a higher tolerance. The emergency strategy should be based on the mid-point of the tolerance estimation.

The NEMT has decision support tools which assess the effects of the various lead times on the Primary System and identifies if, and when, failure could occur, for the purposes of the emergency strategy formation.

### **3.3 NGSE STAGES**

The NEC Safety Case has identified four clear stages to manage an NGSE. Figure 3 identifies the arrangements available to the NEC at each stage. The NEC will decide the appropriate stage at which to declare an NGSE to address the supply-demand imbalance. As the implemented measures take effect, the NEC may revoke some, or all, of the measures within the declared stages until the NGSE is declared over.



Figure 3: The arrangement in place at each of the four stages

NGSE Classification			
Emergency Stage	Insufficient Supplies		NTS Constraint
	Gas Deficit Emergency	Safety Monitor Breach	Critical Transportation Constraint
<b>Stage 1 (Potential)</b>	Gas conforming to Schedule 3 Part 2 of GS(M)R	Instruct Shippers and Storage Operators to amend storage flows	Gas conforming to Schedule 3 Part 2 of GS(M)R
	NTS Linepack		NTS Linepack
	Distribution Network Utilisation	Distribution Network Utilisation	Distribution Network Utilisation
	Public Appeals	Public Appeals	Public Appeals
<b>Stage 2</b>	NGT's role as residual balancer of the OCM <b>is</b> suspended	NGT's role as residual balancer of the OCM <b>is</b> suspended	NGT's role as residual balancer of the OCM <b>is not</b> suspended
	Direct <b>Supplies</b> Into NTS	Direct <b>Supplies</b> Into NTS	Direct <b>Storage</b> Into NTS
	Load Shedding	Load Shedding	Load Shedding
	Public Appeals	Public Appeals	Public Appeals
<b>Stage 3</b>	Public Appeals	Public Appeals	Public Appeals
	Allocation and Isolation	Allocation and Isolation	Allocation and Isolation
<b>Stage 4</b>	Restoration	Restoration	Restoration

### 3.4 PUBLIC APPEAL

The concept of a public appeal for domestic consumers to conserve or stop using gas, is that domestic consumers represent a large proportion of gas demand (when demand is at its highest) and therefore a reduction in domestic demand leads to a mitigation of domestic isolation actions being taken later in the response.

A public appeal can be issued at any stage of an NGSE, the NEC will issue an approval for a public appeal when they feel the appropriate triggers have been met in order to ask the public to:

- a) Conserve gas.
- b) Stop using gas.

The NEC will provide further public messaging concerning:

- 1) The commencement of the isolation of domestic consumers (Stage 3)
- 2) The resolution of the emergency (declaration of Stage 4 Restoration)

The NEC has set out direction for public appeals in the NEC Public Appeal Policy, further detail and guidance is provided in the National Gas Public Appeal Procedure document which directs GDNs to amplify the messaging at a local level, using established communications methods as set out in their Local Public Appeal Plans.

# PART 4 – NGSE STAGE SPECIFIC ACTIONS

## 4.1 NGSE STAGE ONE ARRANGEMENTS

### 4.1.1 STAGE 1 (POTENTIAL) GAS SUPPLY EMERGENCY

A potential NGSE is any situation where the emergency strategy determines that the gas made available, or that could be made available, to the network as a result of Stage 1 actions only is equal to, or greater than, the network supply deficit identified at the beginning of Stage 1 and should, or could, be delivered to the network before failure occurs.

The Primary Transporter, in consultation with the NEC, determines the emergency strategy and, as a result, the NEC must issue either a notice of a Stage 1 (Potential) NGSE or declare a Stage 2 Gas Deficit or Critical Transportation Constraint NGSE. Measures available to manage the NGSE at this stage are detailed in Figure 4.

Figure 4: Emergency actions available at Stage 1

Stage 1 Arrangements	GDE	Safety Monitor Breach	CTC
Primary System Linepack	✓	✗	✓
Distribution Network Utilisation	✓	✗	✓
Gas conforming to Schedule 3 Part II of GS(M)R	✓	✗	✓
Direct Storage facilities to inject gas from the NTS	✗	✓	✗
Public Appeal	✓	✓	✓

### 4.1.2 PRIMARY SYSTEM LINEPACK AND SECONDARY SYSTEM STORAGE

During Stage 1 (Potential), all usable Primary System linepack will be utilised by the Primary Transporter. During the process of collecting data, all Secondary Transporters will indicate to the NEMT how much storage they have available. At this Stage, the NEMT may ask the Secondary Transporters to release this storage by reducing the amount of gas they take from the Primary System.

### 4.1.3 EMERGENCY SPECIFICATION GAS

Under Regulation 8(1) of GS(M)R, a Transporter must not convey gas in the Network unless it complies with Part I of Schedule 3, Regulation 8(1).

However, under Regulation 8(2) of GS(M)R, the NEC may, where it is necessary to prevent, or delay, the occurrence of an NGSE, or a Local Gas Supply Emergency, authorise gas not conforming with

Part I of Schedule 3 to be conveyed in the Network, providing that the gas conforms with the requirements of GS(M)R Part II of Schedule 3. The NEC will not authorise the admittance of gas conforming to Part II of Schedule 3 when there is equivalent amount of gas conforming to Part I of Schedule 3 available.

This provision exists because there may be circumstances in which the introduction of gas conforming to Part II of Schedule 3 is less undesirable in safety terms than the loss of supply. The authorisation for gas conforming to Part II of Schedule 3 should be withdrawn once an equivalent amount of additional gas conforming to Part I of Schedule 3 becomes available, or if the emergency has been averted.

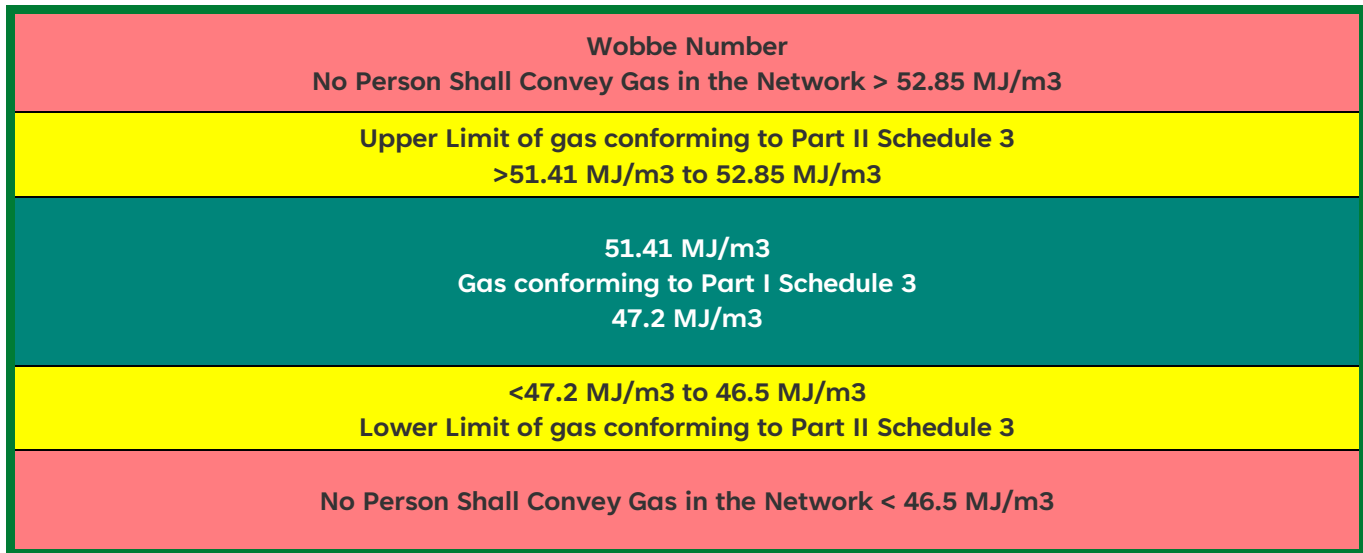
The Primary Transporter must initiate the request to the NEC for the admittance of gas conforming to Part II of Schedule 3, directly or indirectly (i.e., through a Secondary System) into any part of the Primary System or any Secondary System.

The NEC will require demonstration that there is no equivalent gas conforming to Part I of Schedule 3 available to the Primary Transporter and the gas conforming to Schedule 3 Part II of GS(M)R is required.

A risk assessment will be carried out to establish an acceptable duration for which gas conforming to Part II of Schedule 3 can be admitted into the Primary System or any Secondary System. The gas quality margins are illustrated in Figure 5.

The Primary Transporter may relax contractual obligations within the boundaries of Part I of Schedule 3 if this would prevent an NGSE (including a potential) occurring, or to minimise the safety issues if one has already occurred. However, due to time constraints, this process may be included in the NEC authorisation for the admittance of gas conforming to Part II of Schedule 3.

**Figure 5: GS(M)R Gas Quality Specification**



The relevant Transporter is responsible for the operational, commercial, and contractual arrangements associated with the introduction and conveyance of gas conforming to Part II of Schedule 3 in its system, and for any necessary agreements with third parties for the supply or

transportation of the gas. Sufficient tolerance on the specification must be allowed to ensure that it does not fall outside the requirements of Part II of Schedule 3 at any point in the Network.

The relevant Transporter must obtain up to date information about the approximate quantities of gas conforming to Part II of Schedule 3 available at relevant network entry points and/or blending points and notify the NEC, via the Primary Transporter, of the quantities available daily, or otherwise as agreed, with the NEC.

The Transporter who applied for the authorisation must monitor the supply-demand situation and inform the NEC, via the Primary Transporter, when the admittance of gas conforming to Part II of Schedule 3 is no longer required.

The relevant Transporter must inform the NEC of the earliest practicable time at which all the gas being conveyed in the Network is forecasted to meet the requirements of Part I of Schedule 3, and then again when all the gas being conveyed in the network is confirmed to meet the requirements of Part I of Schedule 3.

The NEC must withdraw the authorisation when all the gas in the Network meets the requirements of Part I of Schedule 3.

The NEC must issue the authorisation for the admittance and withdrawal of gas conforming to Part II of Schedule 3 to the Primary and/or affected Secondary Transporters orally and/or in writing.

The following process must be followed prior to the admittance of gas conforming to Part II of Schedule 3:

- a) Confirm that there is a 'in principle'\* Risk Assessment on file for the affected GDN(s)
- b) Confirm that there is a 'in principle' Risk Assessment on file for NTS
- c) Confirm the location where gas conforming to Part II of Schedule 3 will be admitted
- d) Confirm the quantity of the gas conforming to Part II of Schedule 3 being admitted.
- e) Confirm the quality of gas conforming to Part II of Schedule 3
- f) Liaise with the affected GDN(s) to confirm that they agree to admit the gas conforming to Part II of Schedule 3 onto their Network(s) (in writing)
- g) Liaise with the NTS Duty Manager (the Duty Function of the Transmission Owner entity of the Primary Transporter) that they agree to admit the gas conforming to Part II of Schedule 3 into the Networks (in writing)
- h) Only on receipt of acceptance from the GDN(s) and NTS Duty Manager will gas conforming to Part II of Schedule 3 be admitted onto the Network.

*\* An 'in principle' Risk Assessment is one that has been completed pre-emptively by the Gas Transporters with the result that they are agreeable with the concept of accepting Part II of Schedule 3 gas into their system. This does not supersede the requirement to undertake a dynamic risk assessment at the time of the emergency to ensure any presumptions are considered.*

#### **4.1.4 CURTAILMENT OF NTS STORAGE DELIVERY**

If there is a likelihood that the Safety Monitor will, or has been breached, the NEC will seek co-operation from shippers and storage operators to curtail delivery of storage gas to the Primary System. Shippers and storage operators should amend their flows in accordance with the Primary Transporter's request and undertake demand reduction measures or increase supplies to the Network to maintain a supply-demand balance. If demand reduction is required of consumers designated as 'Protected by Isolation', the NEC will declare a Stage 2 NGSE.

## 4.2 NGSE STAGE TWO ARRANGEMENTS

### 4.2.1 DECLARATION OF A GDE, SMB OR CTC

If the arrangements available to the NEMT at Stage 1 (Potential) are insufficient to address the supply-demand imbalance or the transportation constraint, the NEC will consider authorising a Stage 2 NGSE. This Stage will exist when there is no action available to the NEMT that could be taken in the time available to re-balance the Primary System without the recourse to measures available in the NGSE Framework at Stage 2.

Upon declaration of a Stage 2 NGSE, the NEC will categorise the type of NGSE that exists, as per section 2.4 of this procedure.

If, at any time during a CTC NGSE, additional shipper gas would be beneficial in the management of the emergency, the NEC would re-classify the emergency as an NGSE Gas Deficit Emergency. Figure 6 illustrates the actions available during a Stage 2 emergency.

**Figure 6: Emergency actions available at Stage 2**

Stage 2 Arrangements	GDE	Safety Monitor Breach	CTC
Direct Supplies into NTS	✓	✗	✗
Direct Storage into NTS	✓	✓	✓
Public Appeal	✓	✓	✓
Suspend National Gas Transmission's Residual Balancer role in the OCM	✓	✓	✗
Load Shedding	✓	✓	✓

*NOTE - Neither the Primary Transporter nor the NEC has any prior arrangements with producers, field operators, suppliers, or any other party for the supply of gas to the Network in an NGSE. However, under the duty to co-operate, the NEC would expect all gas supplies to be made available and be delivered to the Primary System during an NGSE.*

### 4.2.2 DIRECTING SUPPLIES

Communications between the North Sea Transition Authority (NSTA) and the terminal operators will have identified how much gas can be delivered and its associated delivery timescales. The NEMT must direct Network Entry Facilities to flow to deliver this gas. DESNZ may further deploy notices of direction to Energy Undertakings through an Order In Privy Council under the Energy Act 2013.

#### **4.2.3 DIRECTING DELIVERY OF NON-SAFETY MONITOR STORAGE GAS**

If it has been identified that there is additional Primary System storage gas available over and above that already being delivered, or being made available for use, the NEC will request the NEMT to make arrangements for the delivery of this storage gas.

The Primary Transporter (via the NEMT) will issue direct instructions to the operator of any storage facility to deliver gas to the system if a Stage 2 NGSE GDE or CTC is declared. For determining the emergency strategy, the stock of storage gas should be run down to, but not below, the relevant Safety Monitor level.

The Primary Transporter will communicate directly with the storage operators for the delivery of this gas in accordance with the Primary Transporter's operational procedures.

#### **4.2.4 RESIDUAL SYSTEM BALANCER SUSPENSION**

Once a Stage 2 NGSE (GDE or SMB) has been declared, the NEMT will contact the operator of the OCM to inform of the suspension of NGT's role as residual system balancer with immediate effect. Shippers will continue to be able to trade.

Suspension of NGT's residual balancing role is not suspended in a CTC as the Network outside the constrained area is functioning as normal and requires the continuation of the residual balancing function.

Once the NGSE is declared over, the OCM market operator will be contacted to reinstate NGT's residual system balancer role with effect from 05:00hours on the next gas day.

#### **4.2.5 LOAD SHEDDING**

Load shedding is the procedure used by Transporters to secure a graduated and controlled reduction in demand on all, or part, of their systems to keep the system securely pressurised.

If the previous arrangements available to the NEMT at Stage 2 are insufficient to address the supply-demand imbalance or the transportation constraint, the NEC will consider authorising load shedding. Load shedding will be required when there is no action available to the NEMT that could be taken in the time available to re-balance the Primary System without the recourse to load shedding.

To develop the emergency strategy, the NEMT will identify the volume and location of the load shedding required. If the emergency strategy identifies the need for load shedding in a Secondary System, the NEMT will communicate the volume to be shed with the relevant Gas Transporter. It is the responsibility of the relevant Gas Transporter to maintain a supply-demand balance in their part of the Network. Should the NEMT request load shedding in a Secondary System, it is the responsibility of the Secondary Transporter to ensure this is implemented.

The NEMT must determine the actual effect of the measures by continuously monitoring the offtake of gas from the Primary System and updating the NEC. If the supply-demand imbalance is deteriorating, the NEMT, in consultation with the NEC, must revise the emergency strategy and increase the quantity of load shedding. It may be necessary to request that the NEC escalates the NGSE to Stage 3.



Figure 7 shows the tranches of load shedding implemented during a Stage 2 NGSE. In an SMB, NGSE loads above 2 million therms per annum (tpa) are classified as ‘Protected-by-Isolation’. This will be the first tranche of load to be shed at Stage 2 of this type of NGSE.

If further load reduction is required, consumers taking >25,000 tpa will be contacted by Secondary Transporters, or shippers, and load shed. Public appeal messages should be used to reduce load <25,000 tpa.

**Figure 7: Comparison of load shedding between GDE, CTC and Safety Monitor Breach**

CTC / GDE	Safety Monitor Breach
<b>Very Large Daily Metered Consumers</b>	<b>Protected-by-Isolation (&gt;2M tpa)</b>
<b>Consumers &gt;25,000 tpa</b>	<b>Flow Safety Monitor Storage Gas</b>
	<b>Protected-by-Monitor (&lt;2M tpa)</b>
<b>Public Appeal Message</b>	<b>Protected-by-Monitor (&lt;25,000 tpa via Public Appeal messages)</b>

Figures 8 and 9 identify the different arrangements in place for managing a GDE, CTC and a Safety Monitor Breach. During Stage 2 load shedding, consumers would normally be contacted in order of load size with the largest users of gas first, however, there may be circumstances where this is not desirable. This may be through the requirement of maintaining supplies to large priority consumers or under direction from the DESNZ ERT to maintain supplies to specific consumers, e.g., to maintain supplies to some electricity producers. The NEMT will consider the above factors when developing the emergency strategy. Any communications or instructions from the NEMT will clearly identify any special arrangements, i.e., supplies to some or all priority consumers are to be maintained.

Although the terminology is different between the categories of consumer for a GDE and CTC emergency and that of a SMB emergency, the process for contacting these consumers is the same.

**Figure 8: Load shedding actions available to the Primary Transporter at stage 2 of a Gas Deficit Emergency or a Critical Transportation Constraint**

Stage 2 Load Shedding	GDE	CTC
<b>VLDMCs (including pipes conveying gas to another country)</b>	✓	✓
<b>Consumers &gt;25,000 tpa (732 MWh)</b>	✓	✓
<b>Public Appeal</b>	✓	✓

**Figure 9: Load shedding actions available to the Primary Transporter at stage 2 of a Safety Monitor Breach**

Stage 2 Load Shedding	Safety Monitor Breach
Protected-by-Isolation Consumers	✓
Public Appeal Message to conserve gas	✓
Flow Storage Monitor Gas	✓
Protected-by-Monitor Consumers	✓
Public Appeal Message to stop using gas	✓

#### 4.2.6 PRIORITY CUSTOMERS

Under Condition 6, Paragraph 15 of the Gas Transporters Standard Licence Conditions, Gas Transporters are obliged to establish, amend, and review a list of Priority Customers who should be the last to be directed to cease taking gas in Stage Two where this is necessary for safety reasons.

In accordance with Condition 6, Paragraph 16 and 17 of the Gas Transporters Standard Licence Conditions, the Secretary of State for Energy Security has directed the Gas Transporters to base their lists on the following classes of relevant customers:

- **Category ‘A’**

Consumers where a failure in the supply to their premises could put lives at risk

- **Category ‘B’**

Relevant customers for which the sudden loss of gas causes, or threatens to cause, serious damage, for an unacceptably prolonged period, to human welfare, the environment or the security of the United Kingdom that cannot be reasonably mitigated

- **Category ‘C’**

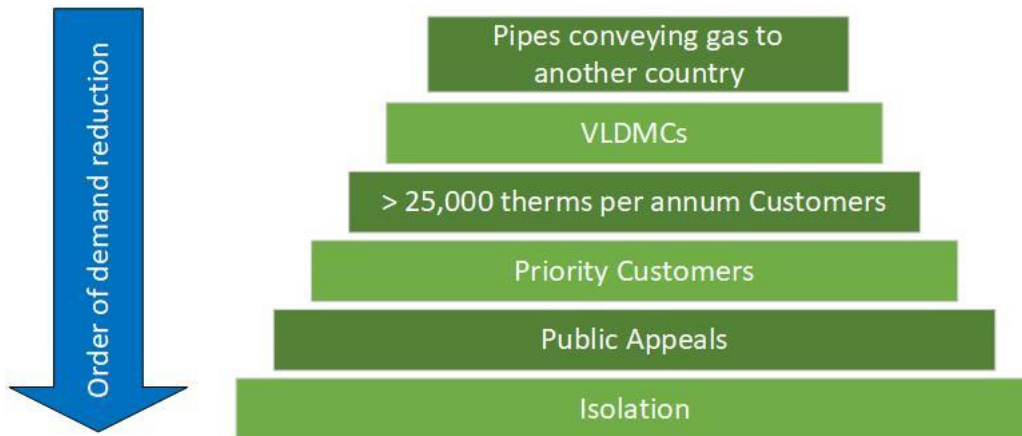
Relevant customers taking over 2 million therms per annum for which the sudden loss of gas would result in repair or replacement costs amounting to 10% or more of the Site Fixed Tangible Asset Value

During an NGSE, the NEC will approve a strategy that, where possible, will maintain gas supplies for as long as practicable to priority customers. Category ‘C’ priority customers, however, will be contacted prior to the delivery of the direction to cease taking gas, in order to direct them to minimise their gas use. Contact for this purpose is made in the order that the category ‘C’ customer would appear in the load shedding hierarchy without priority status. The direction to ‘minimise flows’ requires the category ‘C’ customer to use only the gas which is required to protect against damage leading to repair or replacement costs for which they have sought priority status. They should not continue to manufacture products and should consider making arrangements to limit further damage, should a direction to cease taking gas follow.

The assessment of whether a site satisfies the criteria contained in categories ‘A’ and ‘C’ rests with the Gas Transporter following an application for priority status from the site’s Shipper through Xoserve. DESNZ will regularly conduct an assessment for category ‘B’ status, in consultation with relevant Lead Government Departments.

The DESNZ ERT may interface with the NEMT and the NEC on the action to take with respect to the priority customers.

**Figure 10 Load Shedding Hierarchy**



#### **4.2.7 ARRANGEMENTS FOR LOAD SHEDDING**

Load shedding is put into effect by the NEMT and Secondary Transporters initiating arrangements for making direct or indirect contact with large consumers, and instructing them that they must cease or reduce their consumption of gas.

To assist the load shedding process, Gas Transporters may seek co-operation from shippers and suppliers to contact consumers on behalf of the Transporter. If this approach is adopted, it is essential that all consumers understand that the supplier is operating under the directions of the Transporter and that consumers are aware of the need to follow any directions issued by the Transporter.

Customers using >25,000 tpa and those who fall into the Protected-by-Monitor category should be contacted on a best endeavours basis, however, the swifter the contact is made, the greater the contribution to resolving the supply-demand imbalance on the Network.

#### **4.2.8 PRIMARY SYSTEM LOAD SHEDDING**

The Primary Transporter is responsible (via the NEMT) for contacting all loads directly connected to the Primary System (which are all Very Large Daily Metered Consumers (VLDMCs)) and directing them to cease taking gas. Where time permits, when contacting the VLDMC, the NEMT will issue a direction notice pursuant to GS(M)R Regulation 6(4).

For the purpose of load shedding, if the NEMT is unable to make direct contact with a consumer, they will contact the shipper directly.

In the case of Secondary Systems that export gas from Great Britain, the NEMT will implement demand reduction measures that are achievable without causing adverse implications on the system where the load arises. From the information continually gathered throughout the NGSE (including Stage 1 potential), the NEC and NEMT, in conjunction with the DESNZ ERT where applicable, will ensure that the most appropriate demand reduction strategy is identified.

This strategy may involve reducing Secondary Systems supply from the Primary System to zero in line with the loadshedding hierarchy. These Secondary Systems will not be requested to go to zero where it can be demonstrated that the reduction would directly impact on domestic consumers and cause a supply emergency where the load arises.

In the event that domestic consumers would be directly affected by these Secondary Systems continuing to take gas from the Primary System, the Primary Transporter in conjunction with NEC will implement a percentage demand reduction strategy.

The relevant Secondary Transporter will be instructed by the Primary Transporter, on behalf of the NEC, to reduce its hourly offtake of gas from the Primary System so that its daily offtake of gas is reduced by a percentage equal to the amount of the actual, or anticipated, overall supply deficit in the affected Secondary Systems and the affected part of the Primary System on that gas day. This reduction will be expressed as a percentage of demand in the affected Secondary Systems and affected part of the Primary System.

The percentage reduction will be periodically reviewed by the NEC and should be amended according to the prevailing supply-demand conditions. The reduction in offtake quantity must remain in force until revoked by the NEC.

If the load deficit in the affected secondary system(s) is likely to affect the supply to domestic consumers in those systems in Great Britain, such that there is an increased risk of a supply emergency as defined in the GS(M)R, then it may be necessary on safety grounds, to further reduce or cease flows through these systems. During these times of system stress, the supply of gas to Ireland and Northern Ireland will be reduced equitably along with the four Distribution Network companies in Great Britain.

The Primary Transporter must only invoke the arrangements described above when it can be demonstrated that domestic consumers in Great Britain will be directly affected. This would usually be after public appeals have proved inadequate.

If instructed to do so by the NEC, the NEMT must physically restrict the flow at any Secondary System offtake point if the required reduction in flow is not apparent within a reasonable time of the instruction being given. If it is not possible to physically restrict the flow, then physical isolation of the Secondary System must take place.

#### **4.2.9 SECONDARY SYSTEM LOAD SHEDDING**

Secondary Transporters are responsible for contacting all loads directly connected to their system to direct them to cease taking gas. The NEMT will provide the required volume that needs to be shed.

The Secondary Transporter is responsible for contacting all VLDMCs connected to their Secondary System. If time permits, the Secondary Transporter should issue a direction notice pursuant to GS(M)R regulation 6(4) when contacting consumers.

The Secondary Transporter may contact large consumers direct, or they may seek co-operation from shippers and suppliers to contact the consumer for the purpose of load shedding.

If the shipper is contacting consumers on behalf of the Gas Transporter, no direction notice, pursuant to GS(M)R Regulation 6(4) must be issued at this time. This is due to the difficulty for the Gas Transporter to generate and issue large numbers of direction notices quickly and, as speed is a priority, the benefits of rapid response would be lost if this were attempted.

#### **4.2.10 SUPPLEMENTARY SYSTEMS LOAD SHEDDING**

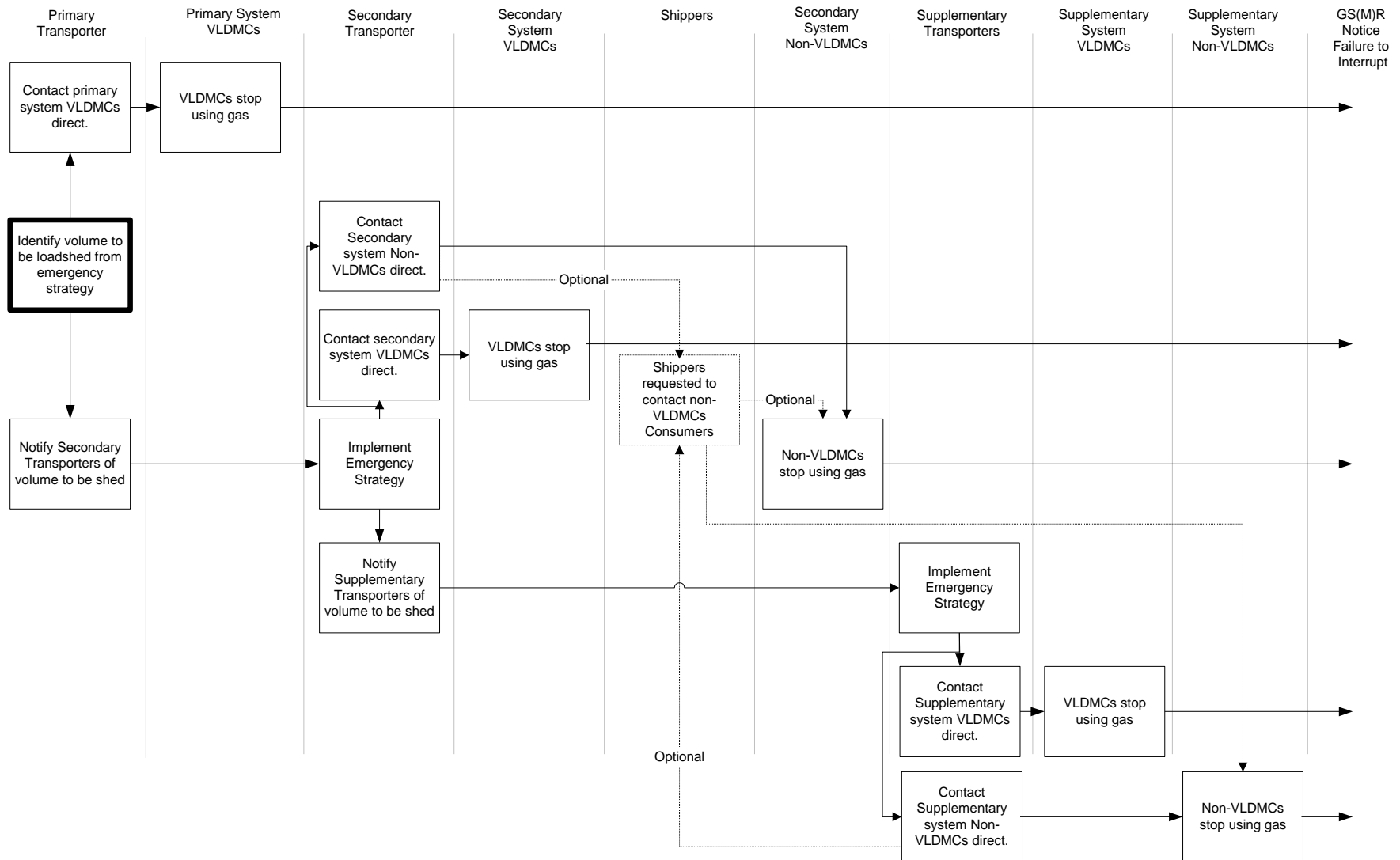
Supplementary Transporters are responsible for contacting all loads directly connected to their system to direct them to cease taking gas. The Secondary Transporter will provide the required volume that needs to be shed. The Secondary Transporter may request specific sites to be maintained or shed.

The Supplementary Transporter is responsible for contacting all VLDMCs and other consumers connected to their system. If time permits, the Supplementary Transporter should issue a direction notice pursuant to GS(M)R regulation 6(4) when contacting consumers.

#### **4.2.11 LOAD SHEDDING FAILURE TO CEASE TAKING GAS - ALL TRANSPORTERS**

If a consumer has failed to cease taking gas and, in the judgement of the Gas Transporter, thereby puts supply security at risk (irrespective of whether a direction notice pursuant to GS(M)R regulation 6(4) has been issued), the Transporter should take any available steps to isolate or disconnect any, or all supply meter points (irrespective of whether any is a shared meter point), comprised in the supply point. Further information on these arrangements are set out in Section G of the Transportation Principles Document of Uniform Network Code.

Figure 11: Load Shedding



#### **4.2.14 FLOWING SAFETY MONITOR STORAGE GAS**

If load shedding of the 'Protected-by-Isolation' consumers and, where applicable, the use of public appeal does not address the supply-demand imbalance, the NEC may request the NEMT to flow Safety Monitor Storage gas to maintain supply to 'Protected-by-Monitor' consumers. The strategy developed by the Primary Transporter will identify how much gas should flow and from what storage facilities.

The Primary Transporter will not flow gas that is required for the orderly run down of the system at Stage 3.

The Primary Transporter will contact the shippers and storage operators to make arrangements for the requested gas to flow into the Primary System.

## 4.3 NGSE STAGE THREE ARRANGEMENTS

### 4.3.1 ALLOCATION OF AVAILABLE GAS

If the load shedding arrangements available to the NEMT at Stage 2 are insufficient to address the supply-demand imbalance or the transportation constraint, the NEC will consider authorising a Stage 3 NGSE. This measure will occur when there is no action available to the NEMT that could be taken in the time available to re-balance the Primary System without the recourse to measures available in Stage 3.

The arrangements available to the NEMT at Stage 3 of a Gas Deficit Emergency (GDE), Safety Monitor Breach (SMB) or a Critical Transportation Constraint (CTC) are shown in Figure 12.

**Figure 12: Emergency actions available at Stage 3**

Stage 3 Arrangements	GDE	SMB	CTC
Allocation of Available Supplies	✓	✓	✓
Isolation of Secondary Systems	✓	✓	✓

If sufficient supplies are not available from the Primary System, isolation of Secondary Systems may be required. To support this process, the DESNZ ERT have arrangements in place for providing additional resources to affected Transporters in the event of individual domestic consumers requiring isolation from the Network, through other government departments associated with the Civil Contingences Act.

The DESNZ ERT also has arrangements in place to amplify the use of self-isolation and self-restoration media material, primarily provided by the Gas Transporters. The DESNZ ERT, in conjunction with the NEC, will confirm if this approach is to be implemented.

### 4.3.2 ALLOCATION OF AVAILABLE SUPPLIES

If insufficient gas is available to supply the Network, or parts of the Network as applicable, even after load shedding, the NEC will allocate the available gas to Secondary Systems and must instruct the NEMT to physically restrict the offtake of gas by Secondary Systems to the allocated amount. In the making of the decision as to the quantity of this remaining supply to allocate to the Secondary Transporters, the NEC may receive information from the DESNZ ERT on the impact of allocation and on the availability of resources to achieve subsequent restoration.

If Secondary Transporters are unable to maintain acceptable minimum pressures in their systems, they must apply to the NEC, via the NEMT, for an increased allocation. If no additional gas allocation is possible, the affected Secondary Transporters, in liaison with any associated Supplementary Transporters, must isolate their systems, or part of their systems, in order to reduce demand to match the allocation available from the Primary System and preserve the pressure in the transmission pipelines (>7 barg).

Those parts of the Network supplying domestic consumers are particularly vulnerable to supply emergencies due to the large number of individual consumers taking gas from the Network. The



NEC's arrangements for allocation of gas, therefore, gives priority to maintaining gas supplies to Secondary Systems supplying domestic consumers.

The criteria for the allocation of gas to Secondary Systems and associated Supplementary Systems are as follows:

- a) The NEC must issue gas allocations directly to the NEMT. The NEMT must notify the Secondary Transporters (including Transporters exporting gas from Great Britain) of their allocations. Secondary Transporters must liaise with their associated Supplementary Transporters on the effect of the allocations.
- b) The Primary, Secondary and Supplementary Transporters must be responsible for maintaining the supply-demand balance within their relevant parts of the Network and protecting supplies to domestic consumers by appropriate demand management which could include more frequent public appeals, or physical isolation of industrial/commercial premises.
- c) The NEC and the NEMT, in liaison with the Secondary Transporters, must review the allocation of gas across all the Secondary Systems to determine if any systems have 'surplus' allocated gas that could be redistributed to those systems in 'deficit'.

#### **4.3.3 SYSTEM ISOLATION**

If the NEC is unable to increase the allocation of gas to one or more Secondary System(s), it must, in consultation with the Primary and Secondary Transporters and DESNZ, review the allocation of gas to match network supply and demand by selected system isolation by either:

- a) Maintaining partial supplies to all affected Secondary Systems and associated Supplementary Systems, with some consumers isolated in each affected Secondary System with the possibility of Supplementary Systems being isolated also; or
- b) Maintaining full supplies to one or more Secondary Systems whilst isolating some or all consumers in one or more other Secondary and associated Supplementary Systems.

Where a Secondary Transporter is not allocated sufficient gas to maintain minimum pressures at the extremities of its system, it must take steps to isolate the extremities of those systems to maintain the pressure in the upstream pipelines operating at 7 barg or above. This should protect the Primary System and preserve the bulk transportation capability of the Secondary System for as long as possible.

Isolation of these lower pressure systems will almost certainly result in a loss of gas pressure to consumers.

Each Transporter should use their own procedure for system isolation identified in their own operational procedures.

Through regular communications with the affected Secondary Transporters, the NEMT will monitor the actual effect of the measures implemented during Stage 3.

If the supply-demand imbalance is deteriorating, the NEC will direct the NEMT to reduce the gas allocation until the Primary System can maintain a supply-demand balance. This may require all Secondary Systems to be isolated.

## 4.4 NGSE STAGE FOUR ARRANGEMENTS

### 4.4.1 SYSTEM RESTORATION

When sufficient supplies are available to restore pressure to isolated systems or revoke emergency actions taken during Stages 1, 2 and 3, the NEC must initiate the restoration process and, on completion, declare the end of the NGSE. The NEMT must communicate the revocation as detailed through the routes detailed in section 2.5 of this procedure.

Once the supply-demand balance has improved, the NEMT will develop a strategy to progressively revoke the measures taken during the various previous stages of the emergency. The NEMT will propose a strategy for the NEC to approve and coordinate the actions of Secondary Transporters to revoke emergency measures on Secondary Systems. Secondary Transporters must coordinate actions with the Supplementary Transporters to revoke the emergency measures taken on their systems.

If allocation and isolation actions have been taken during the emergency, it is likely to take a considerable amount of time to restore all affected customers. When the supply situation has returned to normal and restoration has been completed, apart from those in sections of the Network which were isolated at Stage 3, the NEC must notify the NEMT of the revocation of the NGSE.

To help facilitate restoration of their systems, Secondary Transporters may declare a Local Gas Supply Emergency. This process does not affect the ability of the NEC to revoke any stage nor declare the end of the NGSE.

### 4.4.2 RESTORATION PROCEDURE

The restoration procedure could be affected by the weather conditions, the available supply sources and the availability of Primary System and Secondary System plant and pipelines. There are many permutations, and it is not practicable for Gas Transporters to prepare detailed specific restoration procedures in advance.

However, certain basic principles must be applied to the process of restoration:

- a) No restoration of end users will take place until, and unless, the security of the Primary System is assured
- b) Restoration of end users is matched to available Primary System supply
- c) In the event of a Safety Monitor Breach being declared, the Safety Monitor will be restored by injection to the affected storage facilities. These actions, or any alternative actions, must be agreed by the NEC
- d) The actions taken by the relevant conveyors are coordinated by the NEC. Where more than one Secondary System has been affected, the NEC consults with the NEMT and may consult with the DESNZ ERT on the restoration priorities
- e) Restoration of supplies to systems operating below 7 barg may take a long time due to the complexity of the system and the large numbers of consumers involved. Where there is a sufficient quantity of gas available, the supplies to industrial/commercial consumers (including VLDMCs) supplied from higher pressure systems may be restored before domestic consumers

- f) Affected Transporters must prepare plans before commencing restoration of pressure to avoid a supply emergency arising or continuing in any part of its system during the restoration process

If required, the DESNZ ERT may put arrangements in place to facilitate the restoration process through the provision of additional resources or the implementation of self-restoration. These options would be progressed in conjunction with the GDN's.

## PART 5 - ROLES AND RESPONSIBILITIES

The following section outlines the responsibilities of the NEC and NEMT during a gas supply emergency on the Primary System. These responsibilities provide a high-level overview and act as a reference guide. They do not replace detailed operational procedures which should be followed during an NGSE.

### 5.1 NEC RESPONSIBILITY

Stage 1	GDE	Safety Monitor Breach	CTC	NEC Actions
<b>Establish if there is an NGSE</b>	✓	✓	✓	Identify from the strategy proposed by the NEMT whether a potential or actual NGSE exists.
<b>Declare NGSE (applies to all stages)</b>	✓	✓	✓	Approve the strategy and declare the required stage.
<b>Gas conforming to Part II of Schedule 3 of GS(M)R</b>	✓	x	✓	The NEC may authorise the admittance of gas conforming to GS(M)R Part II of Schedule 3 to the network if it would prevent, as far as possible, a supply emergency developing, and where it cannot be prevented, admit gas conforming to Part II of Schedule 3 to minimise the safety consequences of the emergency.
<b>Communications (Applies to all stages)</b>	✓	✓	✓	NEC will issue a notice, via the NEMT, of the NGSE stage setting out the nature and location of the problem, the action required to avert escalation to the next stage and the time by which the remedial action must be taken.  The NEC will require Transporters to implement the strategy identified by the NEMT and seek co-operation from those parties listed in GS(M)R Regulation 6(2).
<b>Public Appeal (applies to Stages 1 to 3)</b>	✓	✓	✓	Although the NEC normally only authorises the use of public appeals to conserve or stop using gas during Stage 2 of an NGSE, the NEC may direct gas conveyors to call for Public Appeal at other stages if this would further prevent the deterioration of the situation.
<b>Escalation to next stage (applies to Stages 1 and 2)</b>	✓	✓	✓	If the supply-demand imbalance is deteriorating the NEC may escalate the NGSE to the next emergency stage.

<i>Stage 1 (continued)</i>	GDE	Safety Monitor Breach	CTC	NEC Actions
<b>Revocation of stage (applies to Stages 1, 2 and 3)</b>	✓	✓	✓	If the supply-demand imbalance is improving the NEC may authorise the NEMT to progress to NGSE Stage 4, Restoration.
<b>Stage 2</b>				
<b>Communicate with the DESNZ ERT</b>	✓	✓	✗	Liaise with the DESNZ ERT if additional gas is available via the use of an Order in Council.
<b>Review Strategy and Load Shedding quantities</b>	✓	✓	✓	NEC directs the conveyors to physically restrict the flow at an end user if the required reduction in flow is not apparent in agreed timescales.
<b>Stage 3</b>				
<b>Allocation</b>	✓	✓	✓	NEC authorises gas allocation directions to the NEMT and relevant secondary Transporters.
<b>Allocation review</b>	✓	✓	✓	NEC in consultation with the NEMT and the relevant Secondary Transporter will review the allocation of gas in order to match network supply and demand.
<b>Isolation</b>	✓	✓	✓	If necessary, the NEC may authorise further reductions in gas allocation until a gas supply-demand balance is achieved on the Primary System.
<b>Stage 4</b>				
<b>Restoration</b>	✓	✓	✓	NEC may instruct the NEMT to progressively revoke the measures taken during the emergency.
<b>Revocation of the NGSE</b>	✓	✓	✓	When the supply-demand imbalance is resolved the NEC notifies the Primary and Secondary Transporters of the revocation of the NGSE.

## 5.2 PRIMARY TRANSPORTER RESPONSIBILITY

Stage 1	GDE	Safety Monitor Breach	CTC	Primary Transporter Actions (via NEMT)
Develop emergency strategy	✓	✓	✓	Develop an emergency strategy.
GDN Utilisation	✓	✓	✓	Seek co-operation from Gas Transporters to reduce their take from the Primary System by releasing storage from their Secondary System and any contractual interruption.
Use of Primary System (NTS) Linepack	✓	✗	✓	Optimise use of Primary System linepack.
Curtail storage delivery to the Primary System	✗	✓	✗	The NEMT will request those relevant storage operators and shippers to curtail their delivery of storage gas to the Primary System.
Gas conforming to Part II of Schedule 3 of GS(M)R	✓	✗	✓	Demonstrate to the NEC the requirement for the admittance of gas conforming to GS(M)R Schedule 3 Part II.
Revocation of Stage 1	✓	✓	✓	Revoke directions issued under Stage 1 and declare end of Potential NGSE.
<b>Stage 2</b>				
Suspend National Gas Transmission's residual balancing role in the OCM. Shippers continue to trade	✓	✓	✗	Uniform Network Code states that National Gas Transmission's market activities will be suspended in a Gas Deficit Emergency and Safety Monitor Breach from declaration of Stage 2.
Implement Emergency Strategy	✓	✓	✓	Requests implementation of measures set out in emergency strategy.
Communicate with the DESNZ ERT	✓	✓	✗	Liaise with the NEC and DESNZ ERT if additional gas is available via the use of an Order in Council.
Load Shedding	✓	✓	✓	Implement established arrangements for load shedding and request Secondary Transporters to implement their arrangements.

<b>Stage 2 (continued)</b>	<b>GDE</b>	<b>Safety Monitor Breach</b>	<b>CTC</b>	<b>Primary Transporter Actions (via NEMT)</b>
<b>Specification of load reduction</b>	✓	✓	✓	Identify the reduction in gas demand in the affected system or systems for each conveyor.
<b>Review Strategy and Load Shedding quantities</b>	✓	✓	✓	Physically restrict the flow at an end user if the required reduction in flow is not apparent in agreed timescales.
<b>Public Appeal</b>	✓	✓	✓	Notify Secondary Transporters to commence public appeals.
<b>Progression to 4 Restoration</b>	✓	✓	✓	Revoke directions issued under Stage 2 and declare end of NGSE.
<b>Stage 3</b>				
<b>Allocation</b>	✓	✓	✓	Notify Secondary Transporters of allocations.
<b>Allocation review</b>	✓	✓	✓	In consultation with the NEC and the relevant Secondary Transporters review the allocation of gas in order to match network supply and demand.
<b>Progression to Stage 4 Restoration</b>	✓	✓	✓	Revoke directions issued under Stage 3 and declare end of NGSE.
<b>Stage 4</b>				
<b>Restoration after Stages 1 and 2</b>	✓	✓	✓	Progressively revoke the measures taken during Stages 1 and 2.
<b>Re-instatement of National Gas Transmission's residual balancing role in the OCM.</b>	✓	✓	✗	Re-instatement of National Gas Transmission's residual balancing role in the OCM will take place at start of next gas day. (Market not suspended in a CTC).
<b>Restoration after Stage 3</b>	✓	✓	✓	Progressively revoke the measures taken during Stages 1, 2 and 3.
<b>Restoration after Isolation</b>	✓	✓	✓	No restoration of end users will take place until and unless the security of the Primary System is assured.

# GLOSSARY

<b>Additional Gas</b>	Gas that would be available to the Network at stage 2, (using whatever existing arrangements the Primary Transporter has in place for the delivery of such gas), but is either not available, or is not offered, to the Network at stage 1.
<b>Active Notification System (ANS)</b>	Active Notification System, one of the mediums used by NCC and NEMT to communicate with the shippers.
<b>Bio Methane Facility</b>	Biomethane production facilities are classified as gas production facilities, under Regulation 2(1) of GS(M)R and therefore have a duty to cooperate with the NEC under Regulation 6(1) of GS(M)R.
<b>Blending Point</b>	Regulation 2(4) [guidance] of GS(M)R defines a blending point as, a point where out of specification gas is mixed with other gas on the network to produce a gas of a new composition which is within the specification set out in GS(M)R Part I of Schedule 3*.
<b>Critical Transportation Constraint (CTC)</b>	Where there are sufficient gas supplies available to the Primary System in aggregate, but the Primary Transporter is unable to maintain adequate offtake pressures at one or more Secondary System offtakes due to problems in transporting the gas within the Primary System.
<b>Department for Energy Security and Net Zero (DESNZ)</b>	UK Government Department for Energy Security and Net Zero
<b>GDN Utilisation</b>	Includes releasing available gas from Secondary System through storage or any available contractual Interruption. The notice period and restriction on the number of days of interruption is waived during an emergency.
<b>Gas Processing Facility</b>	Defined by Regulation 2(1) of GS(M)R as, any gas processing facility which: <ul style="list-style-type: none"> <li>a. blends or purifies gas, removes from gas any constituent gases, or separates from gas any oil or water; and</li> <li>b. is situated at a terminal which receives gas directly or indirectly from a gas production facility.</li> </ul>
<b>Gas Supply Emergency</b>	Defined by Regulation 2(1) of GS(M)R as, ‘means an emergency endangering persons and arising from a loss of pressure in a network or any part thereof’.
<b>Gas Transporter (GT)</b>	Own and operate a pipeline system for the supply of gas to a customer base that may include domestic customers.  There are also Transporters of gas that are not licensed GTs. They own and operate pipeline systems that do not supply domestic customers. Several of the systems taking gas from the NTS fall into this category. The GS(M)R applies equally to those Transporters that hold a GT licence and those that do not.
<b>Linepack</b>	A function of volume and pressure. Linepack is required for normal operation. In a gas supply emergency, there may be a surplus linepack available, the quantity determined by location and demand conditions.



<b>Liquefied Natural Gas (LNG)</b>	LNG importation terminals are classified as gas processing facilities, under Regulation 2(1) of GS(M)R and therefore have a duty to cooperate with the NEC under Regulation 6(1) of GS(M)R.
<b>Load Shedding</b>	<p>The procedure used by Transporters to secure a graduated, controlled, reduction in demand on all or part of their system in order to keep the system fully pressurised. *</p> <p>*Whilst the Network is fully pressurised there is no possibility of a supply emergency occurring.</p>
<b>Local Gas Supply Emergency (LGSE)</b>	Any situation which has resulted in, or could result in, a loss of pressure to consumers which would require action to prevent one or more supply emergencies occurring, and where the loss of pressure is caused by a fault in plant or pipes within the Secondary or Supplementary System, i.e., sufficient gas is available from the Primary System.
<b>Network Emergency Co-Ordinator (NEC)</b>	The Network Emergency Co-Ordinator (NEC) is an independent industry role, established under the Gas Safety (Management) Regulations (GS(M)R), whose duty is to co-ordinate the actions across affected points of the gas network to prevent or minimise the consequences of a Network Gas Supply Emergency (NGSE). This is defined as “an emergency endangering persons arising from a loss of pressure in a network, or part thereof”.
<b>Network Emergency Management Team (NEMT)</b>	Network Emergency Management Team convened by the Primary Transporter to manage the tactical level response to an NGSE as set out in the procedure.
<b>National Energy System Operator (NESO)</b>	A new organisation founded on the current activities and capabilities of the Electricity System Operator, but also taking on new roles with a whole system perspective across energy vectors.
<b>Network Gas Supply Emergency (NGSE)</b>	Any situation which has resulted in, or could result in, a loss of pressure to consumers which would require action to prevent one or more supply emergencies occurring, and where the loss of pressure occurred, or could occur, in the Primary System, resulting in a loss of pressure in one or more Secondary/Supplementary Systems.
<b>Notice of Direction</b>	Issued by the Secretary of State under the Gas Act 1986 and 1995 directing a Gas Transporter to maintain supplies to a consumer.
<b>National Control Centre (NCC)</b>	The National Control Centre is owned by National Gas Transmission and undertakes the daily operation of the National Transmission System (NTS)
<b>National Transmission System (NTS)</b>	The National Transmission System is the network of pipes, compressors and pressure reduction equipment that is comprises the Primary System.
<b>NTS Duty Manager</b>	The duty function of the Transmission Owner entity of the Primary Transporter.
<b>Offtake</b>	An installation through which a Secondary System or large industrial consumer takes gas from the NTS.

<b>1 in 20 Peak Day Demand</b>	The peak day demand that, in a long series of winters, with connected load being held at the levels appropriate to the winter in question, would be exceeded in one out of twenty winters, each winter being counted only once.
<b>Operational Balancing</b>	The process of addressing any physical mismatch between supply and demand.
<b>Order In Privy Council</b>	Orders in Council are Orders that have been approved at a meeting of the Privy Council personally by The King. They fall into two broad categories, statutory and Prerogative. Statutory Orders are made under any of the numerous powers contained in Acts of Parliament which give His Majesty a power to make Orders.
<b>Primary System</b>	The NTS, the associated network entry facilities and blending points.
<b>Primary Transporter</b>	Transporter of gas through the Primary System.
<b>Priority End User/Consumer</b>	A customer type, such as hospitals, for whom the potential consequences of a loss of gas supply are such as to warrant priority status under government criteria.
<b>Secondary System</b>	<p>A system taking gas from the Primary System, via offtakes, is classified as a Secondary System. Secondary Systems include large directly connected industrial and commercial loads, and Gas Distribution Networks (GDN) which supply domestic and non-domestic end users.</p> <p>Secondary System Transporters have arrangements in place for monitoring the operation of their systems.</p>
<b>Secondary Transporter</b>	Transporter of gas through a Secondary System.
<b>Shipper</b>	<p>Holder of a licence authorising the person to arrange with any GT for the gas to be introduced into, conveyed by means of, or taken out of a pipeline system operated by that Transporter.</p> <p>Shippers can buy gas from offshore or onshore gas production facilities, from storage facilities, under a trade at the Network Entry Facilities, or within the system*. Also included as shippers are businesses which buy gas from producers for their own use, e.g., power generation companies. Shippers have a contract with the GT at each supply point for transportation.</p> <p>*At the national balancing point (NBP).</p>
<b>Supplementary System</b>	Supplementary Systems take gas from Secondary Systems and supply domestic and/or non-domestic end users. Supplementary System conveyors have arrangements in place for monitoring the operation of their systems.
<b>Supplementary Transporter</b>	Transporter of gas through a Supplementary System.
<b>Supplier</b>	Holder of a supplier's licence authorising that person to enter into contracts with industrial, commercial, or domestic consumers for the supply of gas.

	<p>Suppliers have contracts with shippers but no direct contractual relationship with the GT.</p> <p>Any person only supplying gas to premises taking more than 2 million therms per annum (mtpa) does not need a supplier's licence.</p> <p>Suppliers have a direct relationship with individual gas consumers.</p>
<b>Supply Emergency</b>	An emergency endangering persons and arising from a loss of pressure in a network or any part thereof (GS(M)R Regulation 2(1))
<b>System</b>	A discrete pipeline or a number of interconnected pipelines operated by one Transporter, and which can be considered to be independent of other systems for the purpose of load shedding.
<b>Terminal</b>	A gas processing facility (GS(M)R Regulation 2(1)) or a treatment point (GS(M)R Guidance Notes Paragraph 14).
<b>Transportation Constraints</b>	Arise where the demand on the Primary System or a part of the Primary System exceeds the capability of the Primary System to transport gas.
<b>Transporters</b>	Transporters own and operate pipeline systems which may supply domestic consumers.
<b>Uniform Network Code</b>	A document which describes the commercial arrangements made between a GT and shippers for the operation of a pipeline system.
<b>VLDMC</b>	Very Large Daily Metered Consumer supply points are very large supply points taking more than 50 mtpa.

