

# Exercise 'Everest' 2023 NEC Assurance Exercise Post Exercise Report

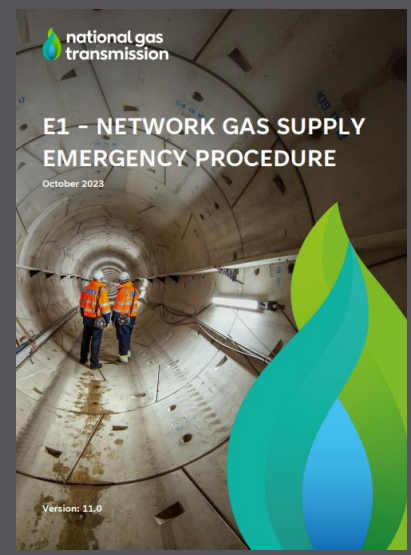
Network  
Emergency  
Co-ordinator



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# Exercise ‘Everest’ was the Gas Industry’s annual Network Gas Supply Emergency (NGSE) Network Emergency Coordinator (NEC) assurance exercise.

This report has been authored by the Office of the NEC. It serves as a record of NEC Industry Exercise Everest 2023.





The ‘E1 Network Gas Supply Emergency Procedure’ sets out how an NGSE is managed. Version 11 was published in October 2023. Click the image on the left to access this important document


Click the image on the right to watch a short video which explains the Emergency Framework



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 Home: takes you back to this page

 Glossary: Link to abbreviations and definitions

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# Exercise Scope

## The NEC Safety Case requires the NEC to develop and deliver an annual exercise:

The overriding aim of the exercise is to demonstrate to the NEC that the Gas Industry is prepared and able to meet its obligations in the event of a Network Gas Supply Emergency (NGSE). The NEC is obligated to review the industry exercise to assure the objectives were met; outline any lessons identified; action areas for development; and publish the results of the review in a report to the Health and Safety Executive (HSE), which is then shared with industry. Full details of the exercise aim and objectives can be found in [Appendix 3](#). This year's exercise objectives were met, though learning points have been identified, which are summarised in the [Learning Points](#) section. Exercise Everest took place over three days as detailed below:

### Tuesday 3rd October Pre-Emergency

- Gas Transporter collaboration
- Gas Balancing Notification
- Gas Availability Status (GAS) report
- Scale-back off-peak exit capacity
- Activation of Operating Margins contracts

### Wednesday 4<sup>th</sup> October Emergency

- Declaration of an NGSE
- Stage 1: admission of 'emergency specification gas'
- Stage 2: entry point flow directions
- Stage 2: load shedding directions
- Public Appeal

### Thursday 5<sup>th</sup> October Isolation

- Further Public Appeal
- Stage 3: allocation and isolation

## The overriding aim of the exercise was to demonstrate to the NEC that the Gas Industry is prepared and able to meet its obligations in the event of an Network Gas Supply Emergency (NGSE).

Exercise Everest continued improving levels of participation across the Gas Industry. Over 400 individuals across more than 50 organisations took part, which allowed the opportunity to exercise processes and interactions across the energy sector. This level of participation also allowed for increased realism and provided opportunities for the responders to work through the challenges that can bring.

### NGSE Strategy

Utilising live data as the basis for which the scenario was overlaid, allowed the NEC and the Gas Industry to work through processes in more detail, taking a more pragmatic approach in order to safeguard life, protect pressure on the Gas Network and limit implications to wider industry.

### Gas Transporter Interactions

The realism allowed by the continued growth in the scale of the exercise, allowed Gas Transporters to further mature their arrangements for sharing information and deploying a demand reduction strategy. The group would benefit from the modernisation of their information sharing tools, and exercise planners will ensure that more time is available for Stage 3 actions to be undertaken in future years.

### Load Shedding

The load shedding process test on the NTS demonstrated an improved performance. The performance in the LDZs is stable but further improvement is reliant on the quality of communication details shared with the GDNs. There is also an increase in industrial gas connections supplying residual heat to domestic consumers.

### Gas and Electricity Interactions

The capability for the GSO and ESO to share information, and for this information to guide the strategy for a whole energy system approach to an energy shortage, is now well embedded. Further technical mechanisms to support this capability now require development, such as the role of the ENCC in load shedding. There is also an opportunity to map a route for approval for the ESO to take non-standard Electricity System actions to reduce gas fired generation.

### Public Information

The process for the issue of an NEC Public Appeal has been modernised. This now requires embedding and further testing. There remains a pressing need for pre-emptive whole energy system focused communications materials to be developed and an opportunity to utilise the 'UK Energy Outage' website for whole system use.

### Managing Supply

The processes for determining supply headroom and load shedding demand on the continental European Interconnectors were both tested successfully.

### ROI and IE Participation

A higher level of participation allowed a broader view of the implications of a gas supply shortage, with opportunities identified for interactions between those who hold a role equivalent to the NEC

# NGSE Strategy

**Utilising live data as the basis for which the scenario was overlaid, allowed the NEC and the Gas Industry to work through processes in more detail, taking a more pragmatic approach in order to safeguard life, protect pressure on the Gas Network and limit implications to wider industry.**

The approach to the formation of the NGSE strategy has become more pragmatic than in previous years due to a more detailed understanding of the implications of a gas supply shortage on society, in GB and beyond. The use of live data provided enhanced realism in this area and supported a detailed test of strategy formation in the following areas:

- the desire to avoid isolating supply to domestic consumers of energy until absolutely necessary for their safety
- the operational decision to issue a Public Appeal
- the move from priority customer load shedding to allocation and isolation

## Whole Energy System Protection

Day One of the exercise was undertaken on a day of high winds. This meant that demand for gas fired power generation was low, with gas generation units being required to provide stability of the Electricity System only. Therefore the NEMT took the decision to limit the activation of commercial actions on gas fired power generation, in order to avoid a National Power Outage. This was further endorsed by the NEC, who declared an NGSE before all commercial actions on power generation were exhausted.

On the later days of the exercise, a strategy was deployed in attempt to avoid demand control on the Electricity System until Stage 2 load shedding began on the Gas Network. This is the point at which the direction to undertake a rapid reduction in gas demand was required to protect pressure and the supply of gas to domestic consumers. All gas fired power generation not fundamental to Electricity System stability was load shed, which forced the ESO to enact demand control (in addition to an Electricity specific exercise inject).

## Public Appeal

A live operational decision on the issuing of a Public Appeal to ‘conserve gas’ was taken on Day Two of the exercise. When Stage 2 was initially declared, the NEC did not approve the use of Public Appeals. This decision was based on the warm temperatures across the country, leading the NEC to reason that any domestic consumer using gas for heat in such temperatures was doing so because they were likely vulnerable and therefore stood to be adversely impacted by being requested to reduce their consumption. As the emergency approached isolation of domestic consumers, it was reasoned that a reduction in consumption was safer than complete isolation from supplies. The [Public Information](#) section covers the communications elements of the issuing of a Public Appeal.



# NGSE Strategy

## Priority Customer Protection

On Day Two of the exercise, the load shedding hierarchy (see [Appendix 7](#)) was followed with the exception of gas fired power generation classified by the ESO as fundamental to Electricity System stability. The load shedding hierarchy requires customers classified as priority (see [Appendix 6](#)) to be the last industrial customers to be directed to cease taking gas. Priority status normally only protects Priority Customers until the end of Stage 2 of an NGSE. The standard strategy approach thereafter is for all Priority Customers to be directed to cease taking gas before a Stage 3 NGSE is declared.

Upon undertaking the decision to load shed Priority Customers, the NEC reflected that due to the warm weather conditions, the vulnerability of being disconnected from gas supplies was more weighted to category A Priority Customers than the vulnerability to domestic consumers. The NEC therefore directed that Priority A customers not be disconnected from the Gas Network. The weather forecast was for high temperatures to continue, so this dynamic assessment of vulnerability was considered to be appropriate for the foreseeable future, noting the longer return time for domestic consumers versus industrial customers.

On the basis of the detail of the data presented to them, the NEC may use their discretion to alter the load shedding hierarchy. In order to be able to make the most informed decision, the NEC requires further data on Priority Customers across the Gas Network be provided by the Gas Transporters.


It is further assessed that, in order to allow the NEC to undertake such a decision, the Gas Transporters should explore the ability to avoid Category A Priority Customers in their isolation plans.

## Other Strategy Formation Findings

As was identified post exercise, the majority of GDNs did not engage with the Supplementary Gas Transporters connected to their networks during the exercise. This was a required element of the scope, highlighted pre-exercise as being an important element of the response as the Independent Gas Transporters who operate these supplementary systems can undertake load shedding, offer mutual aid to support isolation and require to be kept abreast of the NGSE strategy.

The testing of the NEC response interactions protocol between the NEC and DESNZ Gold Command enhanced the response interactions; however, there were occasions where the NEC was contacted where National Gas Transmission was the appropriate party. This requires resolution.

Finally, work was undertaken across 2023 to create a mechanism to direct Priority Customers to minimise their use of gas when load shedding commences. The GDNs gathered data during their load shedding exercises to support further understanding of the potential outcomes of this procedure being utilised.

 **Relevant Working Groups:**

- E3 Alignment Group
- Gas Task Group



# NGSE Strategy

## Learning Points

1. The NEC would benefit from further data relating to Priority Customers across the network when making the decision to direct them to be load shed.
2. The ability for the GDNs to avoid isolating Category A Priority Customers when undertaking isolation should be explored, to allow flexibility in the decision to alter the load shedding strategy.
3. Remedial action is required to assure the Supplementary Transporters, which operate Supplementary Systems, are a core element of NGSE response activities, actively feeding into strategy formation, and that they are included in future exercises.
4. Further clarification is required to refine the interaction protocol between DESNZ and the NEC, to ensure appropriate engagement between parties in response activities
5. Work already undertaken to proceduralise a direction for the NEC to instruct Priority Customers to 'minimise flows', requires to be presented to the relevant stakeholder groups for awareness, with a view to making the required changes and to allow testing in the 2024 exercise.





# Gas Transporter Interactions

**The realism allowed by the continued growth in the scale of the exercise, allowed Gas Transporters to further mature their arrangements for sharing information and deploying a demand reduction strategy. The group would benefit from the modernisation of their information sharing tools, and exercise planners will ensure that more time is available for Stage 3 actions to be undertaken in future years.**

The use of live data in Exercise Everest demonstrated that, when live systems are utilised, the sharing of Netman 1 forms (which includes demand breakdown) can be undertaken at pace, which is critical for formation of the response strategy.

The exercise also demonstrated that the analysis undertaken by the GDNs to calculate emergency pressures remains a process which takes time. It is therefore important that this analysis is undertaken as soon as a deficit of gas is predicted/realised.

The declared emergency pressures at some specific exit points remained close to 'normal' operating pressures and elevated compared to adjacent network pressure requirements which has a significant impact on aggregate commercial and emergency actions. Understanding these pressure outliers is key to ensuring proportionate actions are deployed.

The use of live data during unseasonably warm weather had an unexpected impact on the calculation of the expected returns from load shedding of non daily metered sites. Because demand was so low, the aggregate returns from load shedding were overestimated, in some cases beyond the total 'on the day' demand of the LDZ. Whilst it is unlikely that a Gas Deficit NGSE would be required in such warm weather, it is recommended that the Gas Transporters reflect on this limitation and consider the implications for the calculation of load shedding returns in the face of a local constraint.

The sharing of information between Gas Transporters continues to be open to opportunities for improvement. Similar to the NEC, the NEMT would benefit from GDNs sharing their Priority Customer lists pre-emptively, to support the prompt formation of the load shedding strategy. There is also an opportunity for network maps and the location of large industrial customers to be shared.

Without the above recommended information being available during Exercise Everest, some of the information requested to aid the formation of the emergency strategy was slow to be returned to the NEMT. This led to the NEC issuing emergency directions which required the GDNs to exhaust tranches of the load shedding hierarchy, rather than the normal route, which is to request an explicit volume of gas which is required to be saved. This approach was necessary to maintain the pace of the response, but it caused confusion as the forms utilised to communicate NEC directions did not allow for this 'non-standard' direction to be conveyed.

The Gas Transporters have collectively agreed to develop an online system for the sharing of information to modernise the approach which currently relies heavily on email communication. It will take time to develop such a system, especially given the potential sensitivity of the data and information which the system will be required to share.



# Gas Transporter Interactions

In the meantime, the Gas Transporters have agreed to modernise the suite of information sharing forms to ensure they are flexible, whilst allowing a clear audit trail of the response.

The use of live data further allowed the opportunity for GDNs to liaise with their respective Electricity Distribution Network Operators (DNO). Liaison at this level is valuable to understanding the local picture with regard to actual and potential demand control actions and their implications to the respective energy system. This interaction requires a protocol and agreement to drive it forward. It is also recommended that the outcome of a previous study on the impact of electricity demand control on gas demand in the LDZs is revisited, to generate a broader contemporary understanding of the predicted interactivities.

It was late on Day Three of the exercise before a Stage 3 NGSE was declared. This is considered admirable, as progression to this stage was actively avoided, as it would be in a live emergency. However, this late declaration left little time for the consequential isolation processes to be undertaken by the GDNs within the exercise time frame. This lost the value of such broad participation. The Office of the NEC will undertake a review of the scope of the exercise. This will reflect on how to ensure that Stage 3 processes are given sufficient response time to be exercised in full. The use of live data and the delivery date of the exercise will also be considered in this review. The first week of winter is not preferable for the Gas Shipper community and October temperatures are too variable to allow for use of live data.

## Learning Points

6. A review of the approach to deciding emergency pressures, with a view to reducing spikes, would be beneficial to ensuring proportionate actions are deployed.
7. The calculation of load shedding returns is less accurate at times of weather extremities, so the process should be reviewed.
8. Pre-emptive sharing of data and information requires enhancement to support the pace of the formation of an emergency strategy.
9. The forms used to share information and record NEC directions would benefit from modernisation with a view to ensuring they are more flexible.
10. A modernised online approach to information sharing would benefit the response, though it is appreciated this will be a long term project.
11. Interactions between GDNs and DNOs require planning to harness the value in sharing the outcome of demand control activities.
12. An updated study on the impact of electricity demand control on gas demand would support isolation planning in the Gas LDZs
13. The Office of the NEC will review the scope of the Industry Exercise with a view ensuring sufficient response time is spent on Stage 3 considerations, whilst also reviewing the use of live data and the delivery date of the event.



### Relevant Working Groups:

- E3 Alignment Group
- Gas Task Group



# Load Shedding Performance

**The load shedding process test on the NTS demonstrated an improved performance. The performance in the LDZs is stable but further improvement is reliant on the quality of communication details shared with the GDNs. There is also an increase in industrial gas connections supplying residual heat to domestic consumers.**

The NEMT conducted the assurance activity of contacting all sites connected to the NTS, which have an active gas flow, during Exercise Everest (expanded on [page 11](#)). The load shedding performance on the NTS was the best in recent years, a positive reflection of a comprehensive review of emergency contact information.

There continues to be a desire from some NTS connected sites to have a long duration to shut down, where emergency shut down protocols can lead to equipment damage. This requires continual challenge, as it was in Exercise Everest.

This year's load shedding performance in the LDZs, (expanded on [page 12](#)) is stable when compared to the 2022 results. The upward trend in results experienced in the last five years has now slowed. It is assessed that further progress is reliant on the quality of emergency contact information which is passed to the GDNs from Shippers via Xoserve. The quality of this information is a long standing issue.

The load shedding exercises further identified a number of sites which are listed as industrial connections in the LDZs but provide heat to domestic consumers. Activity is required to appropriately categorise these connections to ensure there is a clear protocol as to when they should be directed to cease taking gas.


## Learning Points

14. Previous attempts by the GDNs to remind Shippers of the UNC obligation to provide accurate emergency contact information for their industrial sites have not been successful in influencing an improvement. A revised approach is required.
15. Clarity is required in E1 on the classification, and therefore position in the load shedding hierarchy, for industrial connections which provide heat to domestic consumers.

### What is Load Shedding?

Load shedding is the procedure used by Gas Transporters at Stage 2 of an NGSE, to secure a graduated and controlled reduction in demand on all, or part, of their systems in order to keep the system securely pressurised.

This is achieved by making direct, or indirect, contact with large consumers and legally directing them to stop, or reduce, their consumption of gas, as per the Gas Safety (Management) Regulations 1996.

 **Relevant Working Group:**

- E3 Alignment Group

# Load Shedding Performance - NTS

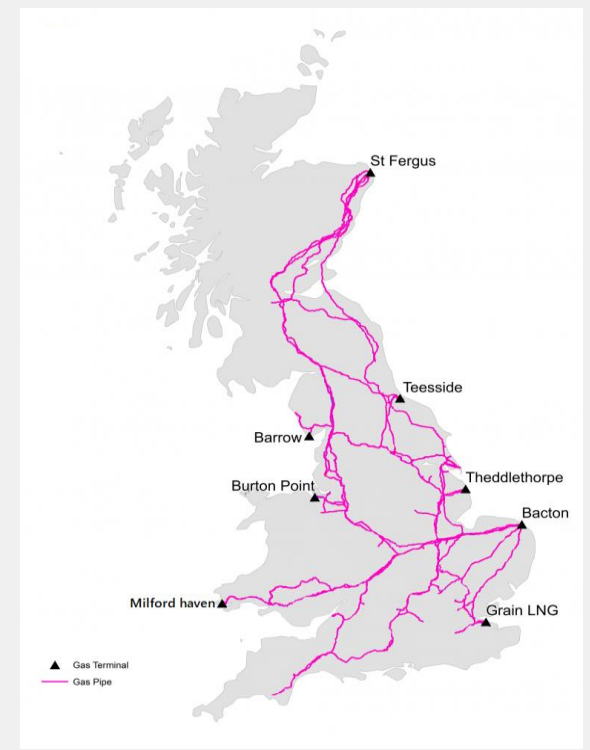
There are currently 55 sites directly connected to the NTS. During Exercise Everest contact was successfully made with all 55 sites.

- 54 sites confirmed they would cease taking gas within 1 hour
- 1 site stated that they would take between 1-2 hours to cease taking gas

Exercise Everest	
Successful Contact	Confirmation site would stop using gas within one hour:
<b>100%</b>	<b>98%</b>

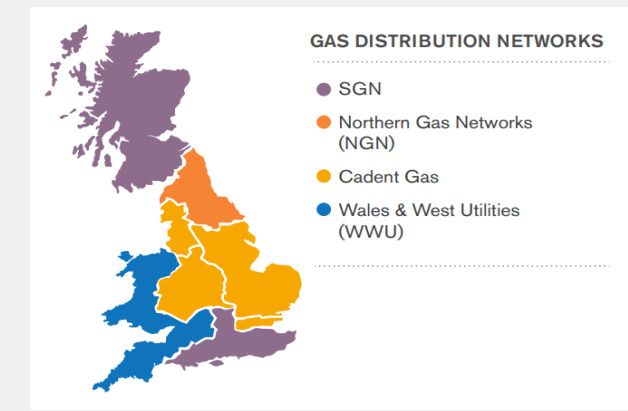
Performance history (last 4 years)	
Exercise Name and Year of delivery:	Percentage of sites who could be contacted and would stop using gas within one hour:
Degree 2022	93%
Celsius 2021	96%
Baltic 2020	94%
Arctic 2019	87%

## The National Transmission System



# Load Shedding Performance - LDZs

This year's load shedding performance within the LDZs is stable overall in comparison to an equivalent test in 2022. The 2023 results provide an assurance that the GDNs were able to maintain their ability to contact their top 200 sites. The E3 Alignment Group will continue to collaborate to improve load shedding performance and consider if a measure of 'indicative load removed' may be a more representative measure in future exercises.



Exercise Everest 2023 – Performance Breakdown							
GDN	No. of sites attempted to be contacted	No. of sites where contact was made, and site <u>would</u> stop using gas		No. of sites where contact was made, and site would <u>not</u> stop using gas		No. of sites who could <u>not</u> be contacted	
Cadent	1,000	902	90%	4	0.5%	94	9.5%
NGN	400	328	82%	32	8%	40	10%
SGN	600	517	86%	0	0%	83	14%
WWU	600	598	99%	0	0%	2	1%

Performance History (last 5 years)			
Exercise Name and Year of delivery	No of sites attempted to be contacted	No of sites where contact was made, and site would stop using gas	
Everest 2023	2600	2345	90%
Degree 2022	2600	2319	90%
Celsius 2021	2600	2362	91%
Baltic 2020 <sup>1</sup>	600	572	95%
Arctic 2019	2751	2400	87%

<sup>1</sup>The 2020 assurance activity was scaled down to top 50 sites due to COVID-19



# Gas and Electricity Interactions

The capability for the GSO and ESO to share information, and for this information to guide the strategy for a whole energy system approach to an energy shortage, is now well embedded. Further technical mechanisms to support this capability now require development, such as the role of the ENCC in load shedding. There is also an opportunity to map a route for approval for the ESO to take non-standard Electricity System actions to reduce gas fired generation.

It is considered that the embedding of the protocols of interaction between the GSO and ESO has now been achieved, though the collaboration procedures between them will require continuous review in response to the dynamism of the two systems. The protocols have been well practiced; a suitable number of responders are trained to enact them; and, they withstood pressure testing during Exercise Everest.

There is now a requirement to adopt a sustainable whole energy system information sharing dashboard, as the current system begins to reach the end of its intended lifespan. This presents an opportunity to open this system to a broader scope, beginning to integrate distribution level interactions alongside those of the two System Operators.


The exercise presented the opportunity for the ESO to put forward a strategy for utilising tools on the Electricity System to reduce the use of gas fired power generation. This was undertaken at the point which the ESO had confirmed that the activation of the full suite of GSO's Operating Margin contracts would trigger electricity demand control.

This meant GSO held back on contracts they would have otherwise utilised to balance the Gas Network. It was positive to see the GSO and ESO explore what actions could be taken on the Electricity System, albeit out of standard sequence, to alleviate system stress across both gas and electricity. These actions did not however progress to fruition due to a lack of mandate for the ESO to deploy them and no power for the GSO to direct them.

There remains a need for the two system operators to reflect, with a broader stakeholder group, on the role the ENCC could take in delivering load shedding instructions in order to safely match the removal of generation with the phased control of electricity demand under OC6.

## Learning Points

16. The information sharing protocols between GSO and ESO require review to ensure a clear mechanism for ESO undertaking action on the Electricity System for the benefit of the Whole Energy System
17. There remains an opportunity to increase the efficiency of load shedding gas fired power stations directly connected to the NTS whilst avoiding Electricity System instability. This requires the exploration of an enhanced role for the ENCC in the load shedding process.

 **Relevant Working Groups:**

- EGRI Task Group
- Gas Task Group
- Electricity Task Group



# Public Information

The process for the issue of an NEC Public Appeal has been modernised. This now requires embedding and further testing. There remains a pressing need for pre-emptive whole energy system focused communications materials to be developed and an opportunity to utilise the ‘UK Energy Outage’ website for whole system use.

The focus of the modernisation of NEC Public Appeals has been on central messaging from the NEC which is then amplified by Gas Transporters and, in certain cases, UK Government. The process also involves the NEC holding a press conference upon the declaration of a Stage 3 Emergency. There is now a need to have the messaging confirmed by stakeholders and agreed as accurate before any further testing and exercising is undertaken. This should include consumer testing on the messaging drafted.

The ‘UK Energy Outage’ website has recently been converted from an electricity platform and is now available for whole system use. The NEC Public Appeal will refer consumers to the gas pages of this website for additional information. Therefore the website needs to reflect the messaging agreed above.

This section of the report has had some enduring learning points which are yet to receive the attention required to close them. A concerted effort is now required before the 2024 Industry Exercise, to develop sufficient pre-emptive lines and information graphics across all Gas Transporters, which can be promptly deployed to support public information messaging surrounding the operational response to a gas supply shortage. The Communications Task Group must then undertake an annual exercise schedule to embed and develop this capability.

## Learning Points

18. The modernised Public Appeals process now requires embedding, with a view to assuring full clarity in the messaging and the undertaking of consumer testing.
19. There remains a pressing requirement to complete the development of information graphics and media lines, which includes consumer advice which is cognisant of ‘whole energy system’ impact. This should be supported by the population of the gas pages of the ‘UK Energy Outage’ website.
20. It is still recommended that Communication Teams undertake standalone exercises to improve and refine the outcomes of these learning points, alongside other CTG work scopes, to mature organisational learning outside of the NEC Industry Exercise [The Communications Task Group has scheduled such events for January and March 2024].



**Relevant Working Group**  
• Communications Task Group



# Managing Supply

**The processes for determining supply headroom and load shedding demand on the continental European Interconnectors were both tested successfully.**

In the face of a supply shortage, the NEMT is able to request the North Sea Transition Authority (NSTA) to utilise their powers to require terminals to complete a ‘Gas Availability Status’ (GAS) Report, which provides data on the amount of gas available to flow which has not yet been nominated onto the NTS, i.e. supply ‘headroom’. This process was completed at pace and all responses were received within an hour.

The GAS Report process includes notification of any ‘emergency specification’ gas that the terminals may be able to flow. Though the process for risk assessing the admission of ‘emergency specification’ gas was thoroughly tested, for the purpose of the exercise, its availability was scripted as live data suggested that no entry terminal had any emergency specification gas to offer. The GAS Report process is vital to the formation of the pre-emergency strategy because it provides information on how effective trading and supply enhancement incentives are likely to be. It is therefore positive that this process was completed without delay.

The process for reducing demand exported by the two European interconnectors was successfully tested. The failure to achieve a price differential to incentivise these interconnectors to become a supply point for GB was heavily scripted for the purpose of the exercise. Outside of the exercise scenario, it is assessed that this price differential would be achieved.



# Republic of Ireland & Northern Ireland Participation

**A higher level of participation allowed a broader view of the implications of a gas supply shortage, with opportunities identified for interactions between those who hold a role equivalent to the NEC**

A wider range of stakeholders across the Republic of Ireland (ROI) and Northern Ireland (NI), including the Isle of Man, was sought to participate in Exercise Everest compared to previous years. Appendix 1, outlines this participation in full.

This addition to the exercise was viewed to be a positive enhancement, supporting a broader view of the implications of a gas supply shortage in Great Britain (GB). During Exercise Everest the procedures associated with the Memorandum of Understanding between ROI and UK were tested. This MoU, agreed in September 2023, provides a revised political basis for the pre-existing arrangements for the pipelines which flow from Moffat to ROI, NI and Isle of Man, to be treated as a Secondary System to the NTS by the NEC. This means that the same directions given to the GDNs who operate the GB Secondary Systems are given to GNI on an equitable basis. This leads to supplies commercially nominated to flow via the Moffat offtake from the NTS are reduced in line with demand reduction on the GB Gas Network.

There is an opportunity for those who hold a coordination role similar to that of the GB NEC to collaborate to assure consistency in the deployment of emergency response actions.







# Summary of Learning Points

The 15 learning points arising from Exercise Everest are detailed below. These will be reviewed and action plans progressed by the relevant industry group. The Office of the NEC shall report progress against the actions to address each learning point through the bi-annual assurance report, and in regular NEC liaison meetings.

## NGSE Strategy (various working groups)

1. The NEC would benefit from further data relating to Priority Customers across the network when making the decision to direct them to be load shed.
2. The ability for the GDNs to avoid isolating Category A Priority Customers when undertaking isolation should be explored, to allow flexibility in the decision to alter the load shedding strategy.
3. Remedial action is required to assure the Supplementary Transporters, which operate Supplementary Systems, are a core element of NGSE response activities, actively feeding into strategy formation and that they are included in future exercises.
4. Further clarification is required to refine the interaction protocol between DESNZ and the NEC, to ensure appropriate engagement between parties in response activities
5. Work already undertaken to proceduralise a direction for the NEC to instruct Priority Customers to ‘minimise flows’, requires to be presented to the relevant stakeholder groups for awareness, with a view to making the required changes and to allow testing in the 2024 exercise.

## Gas Transporter Interactions (E3 Alignment Group)

6. A review of the approach to deciding emergency pressures, with a view to reducing spikes, would be beneficial to ensuring proportionate actions are deployed.
7. The calculation of load shedding returns is less accurate at times of weather extremities, so the process should be reviewed.
8. Pre-emptive sharing of data and information requires enhancement to support the pace of the formation of an emergency strategy.



# Summary of Learning Points

## Gas Transporter Interactions (E3 Alignment Group) ...[Continued]

9. The forms used to share information and record NEC directions would benefit from modernisation with a view to ensuring they are more flexible.
10. A modernised online approach to information sharing would benefit the response, though it is appreciated this will be a long term project.
11. Interactions between GDNs and DNOs require planning to harness the value in sharing the outcome of demand control activities.
12. An updated study on the impact of electricity demand control on gas demand would support isolation planning in the Gas LDZs
13. The Office of the NEC will review the scope of the Industry Exercise with a view ensuring sufficient response time is spent on Stage 3 considerations, whilst also reviewing the use of live data and the delivery date of the event.

## Load Shedding (E3 Alignment Group)

14. Previous attempts by the GDNs to remind Shippers of the UNC obligation to provide accurate emergency contact information for their industrial sites have not been successful in influencing an improvement. A revised approach is required.
15. Clarity is required in E1 on the classification, and therefore position in the load shedding hierarchy, for industrial connections which provide heat to domestic consumers.



# Summary of Learning Points

## Gas and Electricity Interactions (Electricity and Gas Resilience Interactions Task Group)

- 16. The information sharing protocols between GSO and ESO require review to ensure a clear mechanism for ESO undertaking action on the Electricity System for the benefit of the Whole Energy System
- 17. There remains an opportunity to increase the efficiency of load shedding gas fired power stations directly connected to the NTS whilst avoiding Electricity System instability. This requires the exploration of an enhanced role for the ENCC in the load shedding process.

## Public Communications (Communications Task group)

- 18. The modernised Public Appeals process now requires embedding, with a view to assuring full clarity in the messaging and the undertaking of consumer testing.
- 19. There remains a pressing requirement to complete the development of information graphics and media lines, which includes consumer advice which is cognisant of ‘whole energy system’ impact. This should be supported by the population of the gas pages of the ‘UK Energy Outage’ website.
- 20. It is still recommended that Communication Teams undertake standalone exercises to improve and refine the outcomes of these learning points, alongside other CTG work scopes, to mature organisational learning outside of the NEC Industry Exercise [The Communications Task Group has scheduled such events for January and March 2024].

## Managing Supply

None



# Progress Since Exercise ‘Degree’ (2022)

The learning points arising from the 2022 NEC Industry Exercise ‘Degree’ are set out in the following table, along with a progress statement and completion status.

- Where a learning point has been marked as **complete**, this does not mean that it should not be revisited, or the learning utilised to inform a similar area, or alternate process.
- Where a learning point is marked as **ongoing**, the learning point from this year’s report (Ex Everest) is referenced to demonstrate that understanding is developing and progress has been made since the original identification of this learning.

Out of the 15 learning points arising from Exercise ‘Degree’, seven are considered complete and eight are ongoing due to the scale of the work scope (see progress statements for further detail).

Learning Points From Exercise Degree	Progress	Status
NGSE Strategy		
1. Gas Transporters would benefit from a better understanding of the implications brought by the ESO conducting demand control via OC6 versus a more stable form of demand control in the form of ESEC being invoked.(Gas & Electricity Task Groups)	There has been significant focus on interactions between gas and electricity distribution companies in the time between Exercise Degree and Exercise Everest. However, the building of wholesale knowledge of the processes involved in the activation of OC6 has not been achieved, and changes to the operating code (named OC6.5) require to be better understood.	<b>Ongoing</b> – See Everest Learning Point #11



# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>NGSE Strategy</b>		
<p>2. There is an opportunity to better understand the ability and practicalities of avoiding gas fired power stations in the load shedding strategy (E3 Alignment Group)</p>	<p>The E3 Alignment Group has discussed this learning point and reached the conclusion that it is not appropriate to avoid load shedding gas fired generation embedded in the local distribution zones. There is currently insufficient information available to identify generators in the LDZs to allow GDNs to specifically avoid load shedding them, at the pace which is required of an NGSE.</p> <p>Instead it is for the maturing capability of the interactions between the GSO and ESO to agree the extent to which NTS connected generation will be available to avoid Electricity System instability. Where deemed appropriate by the NEC, NTS connected generation may be utilised to protect against the requirement to enter electricity demand control.</p>	<p><b>Complete</b></p>
<p>3. There is an opportunity to support the dynamic risk assessment, undertaken in Exercise Degree, with sufficient and reliable research concerning the risks associated with Priority Category A Customers losing their supply (E3 Alignment Group)</p>	<p>Following Exercise Degree, the E3 Alignment Group reviewed the load shedding hierarchy. A broad consensus was achieved that normally it is correct for Priority A customers to be load shed before Stage 3 isolation actions are taken. The logic of this hierarchy is that public and private organisations are much more capable of undertaking resilience planning for a loss of energy supplies than domestic consumers and are therefore less vulnerable than the general public in their homes. There is however further learning arising from Exercise Everest where Priority A customers were again not instructed to cease taking gas before domestic consumer isolation. This was due to warm temperatures meaning vulnerability was weighted towards Priority A customers versus domestic consumers. Learning point #2 therefore cements that the NEC may form an alternative strategy on the basis of the evidence available to them, and flexibility is required in the deployment of this strategy.</p>	<p><b>Ongoing</b> – See Everest Learning Point #2</p>



# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>NGSE Strategy</b>		
<p>4. There is an opportunity to enhance the response relationship between the NEC and BEIS (DESNZ) Gold Command, to improve situational awareness of the NGSE strategy (Office of the NEC)</p>	<p>This learning point was actioned through the creation of a response interactions protocol between the NEC and DESNZ Gold Command which was endorsed by these two parties and the HSE. The protocol was tested in Exercise Everest. This protocol aims to provide a high-level guide and proposed agenda for interactions. This is to aid transparency around specifically prescribed areas where DESNZ may be consulted by the NEC and to avoid any perception that these interactions might act to reduce the independence of the NEC role in regard to operational safety matters. The protocol is not meant to in any way constrain interactions taking place more generally as these have been demonstrated to provide significant benefit in terms of shared situational awareness.</p> <p>There are however further lessons identified from the testing of the protocol in Exercise Everest concerning the extent to which the NEC was engaged by DESNZ.</p>	<p><b>Ongoing</b> – See Everest Learning Point #4</p>
<b>Gas Transporter Interactions</b>		
<p>5. The Transporter collaboration in Exercise Degree was not as optimal as in previous exercises. The pace at which information was shared, and some limitations in the details passed, meant that decisions were delayed causing more gas to be consumed which would impact the ‘time to fail’. (E3 Alignment Group)</p>	<p>The GSO and E3 Alignment Group took immediate action to remediate this learning point by the end of November 2022. The GSO delivered urgent NEMT refresher training focused on the findings from Exercise Degree. The E3 Alignment Group then delivered a successful ‘live data’ gas deficit emergency exercise which assured that the pace and quality of collaboration is improved when simulated data is not utilised. This was the catalyst for live data being utilised in Exercise Everest.</p>	<p><b>Complete</b></p>



# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>Gas Transporter Interactions</b>		
<p>6. It is imperative to the success of the NGSE strategy that detailed information on the forecasted capability of load shedding in the LDZs is available. (E3 Alignment Group)</p>	<p>During an E3 Alignment Group sponsored workshop, the GDNs shared their planning assumptions involved in removing industrial demand through load shedding in the LDZs. This involved the GDNs collaborating on, and developing, their daily demand consumption profiles, which are estimates of how gas is being taken by LDZ customers over the course of the day. Better estimation of this consumption profile informs the strategy for load shedding based on the time of day at which it is actioned. These concepts were further tested 1-2-1 with each GDN and the GSO during an expansion to a series of exercises which are deployed over the summer to exercise the processes for initial information sharing.</p>	<p><b>Complete</b> – Further Everest learning identified</p>
<p>7. Preparation and collaboration is fundamental to a successful response (E3 Alignment Group)</p>	<p>Through a Gas Task Group sponsored workshop, the GDNs shared their planning assumptions for deploying NGSE Stage 3 ‘Isolation’ in each LDZ which confirmed planning assumptions, and developed opportunities for consistency. This workshop was found to be valuable and two further sessions were arranged, the last of which was held in November 2023 to enable learning from Exercise Everest to be discussed.</p> <p>Fortnightly horizon scanning meetings now take place between NGT and the GNDs (including GNI) throughout the winter period, which have now re-started for winter 23/24. Further, the E3 Alignment Group has continued to operate a protocol during periods of high gas demand, which sees Group members convening for an exceptional meeting when certain triggers are met.</p> <p>It was actioned by the E3 Alignment Group that it will continue to sponsor an annual ‘Demand Day’ collaborative training workshop for Gas Transporter responders. This workshop was delayed from summer ‘23 to November ‘23, but the Everest Learning points detail an alternative approach which is being taken this year to meet the lessons identified in Exercise Everest in response to the identification of the requirement to modernise the forms which are utilised to share information between the GDNs and GSO and to document the issuing of NEC directions</p>	<p><b>Ongoing</b> – See Everest Learning #9</p>



# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>Load Shedding</b>		
<p>8. Post exercise engagement is required with sites connected to the NTS who were not able to reduce demand within an acceptable timeframe.            (E3 Alignment Group)</p>	<p>This engagement was rapidly undertaken directly between the GSO and the sites in question. It was found that the obligation to cease taking gas was well understood but there is a distinction between ‘crash stopping’ the site equipment and a controlled shut down. It was confirmed during the post exercise interaction that a ‘crash stop’ is required in response to the delivery of the NEC direction to cease taking gas. Further work has also been undertaken to compensate for a controlled shut down of sites in this position, before load shedding is required, through enhancements to the Demand Side Response products.</p>	<p><b>Complete</b></p>
<p>9. There continues to be an opportunity to mature the process for how emergency contact details of all network exit connections are obtained and maintained. The obligation is on the site to provide emergency contact details and maintain this record with provision of a telephone number which will be answered promptly.            (E3 Alignment Group)</p>	<p>The E3 Alignment Group agreed to undertake a further awareness campaign to remind Shippers of their obligations under UNC to provide emergency contact information for industrial connections in the LDZs. This commenced at the October ‘23 Operational Forum. Further work is required to engage Shippers on this subject. The importance of emergency contact details being held by Gas Transporters cannot be underestimated.</p>	<p><b>Ongoing</b> – See Everest Learning Point #14</p>





# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>Gas and Electricity Interactions</b>		
10. There has been success in the introduction of a Principles document, and trained responders to enable real time collaboration between the GSO and ESO for the purpose of maintaining ‘whole energy system health’ and the mitigation of risks to both energy networks. This requires to now be further embedded into the response protocols of the two system operators. (Electricity & Gas Resilience Interactions Task Group)	Though the collaboration procedures between GSO and ESO will require to be continuously reviewed in response to the dynamism of the two systems, it is considered that the embedding of the principles of interaction document between the GSO and ESO has now been achieved. This has been accomplished through the move to a business as usual approach to the continued development of interactions documentation, the training of liaison responders and the deployment of a series of drills in-between NEC Industry Exercises.	<b>Complete</b>
11. There is an opportunity to increase the efficiency of load shedding gas fired power stations directly connected to the NTS whilst avoiding Electricity System instability. This requires the exploration of an enhanced role for the ENCC in the load shedding process. (Electricity & Gas Resilience Interactions Task Group)	The scale of this opportunity, which potentially requires legal change, means this learning point is one which requires further time to realise. Now that GSO to ESO interactions are embedded, further attention can turn to deploying this exploration into process change.	<b>Ongoing</b> – See Everest Learning Point #17
12. It is prudent to explore if there are benefits to a joined up approach to the location in which gas and electricity demand disconnections are deployed. (Electricity & Gas Resilience Interactions Task Group)	In March ‘23 the EGRI Task Group approved the closure of this learning point to the following statement: ‘there have been conversations around the lack of planned alignment or deconfliction on the locations in which gas and electricity demand disconnections are deployed. Initial assessments have suggested that the complexity of implementing a joined up approach during an NGSE could be limiting to the response strategy. EGRI Task Group supports not progressing project work in this area due to the risk of a solution slowing down the response strategy.’	<b>Complete</b>



# Progress Since Exercise ‘Degree’ (2022)

Learning Points From Exercise Degree	Progress	Status
<b>Public Communications</b>		
13. There remains a requirement to develop information graphics to support the developing bank of prepared media lines, which includes consumer advice which is cognisant of ‘whole energy system’ impact. (Communications Task Group)	This learning point was not progressed beyond materials provided to support the modernisation of a Public Appeal.	<b>Ongoing</b> – See Everest Learning Point #19
14. There remains a need to review and modernise the process for issuing NGSE Public Appeals, which provide advice on how to conserve gas. This should include the coordination of how this information is issued and by whom, and an understanding as to how the public are likely to respond. ‘Whole energy system’ advice should also be consider. (Communications Task Group)	The processes for the NEC issuing and communications stakeholders ‘amplifying’ a Public Appeal was fully modernised throughout 2023. This led to a government endorsed process supported by Gas and Electricity Network Operators being available for testing in Exercise Everest. This testing carries it own learning which is documented in this Exercise Everest report.	<b>Complete</b> – Further Everest learning identified
15. It is still recommended that Communications Teams undertake standalone exercises to improve and refine the outcomes of these learning points, alongside other CTG work scopes, to mature organisational learning outside of the NEC Industry Exercise (Communications Task Group)	The Communications Task Group did undertake a workshop on Public Appeals going into winter 23/24. This included the delivery of a knowledge refresher on the operational procedures for gas and electricity supply shortages. However, the spirit of this learning point was for the CTG to sponsor a simulated or tabletop exercise to explore in detail the processes associated with an energy shortage outside of the operational focus of the NEC industry exercise. This is with a view to assuring that operational considerations do not limit the extent to which communications processes are deployed and there is no distraction from the objectives of this bespoke event.	<b>Ongoing</b> – See Everest Learning Point #20



# Appendices

- 1 Exercise Participants
- 2 The NEC
- 3 Exercise Aim and Objectives
- 4 List of Abbreviations and Definitions
- 5 Industry Working Groups
- 6 Priority Customers
- 7 Load Shedding Hierarchy



# Appendix 1 – Exercise Participants

The NEC Office estimates that over 400 industry participants took part in Exercise Everest from a range of areas, as illustrated here:

Government and Regulators	National Gas Transmission	Terminal Operators and LNG Importation Terminals		Storage Facilities	National Transmission System – Directly Connected Sites	Northern Ireland
Department for Energy Security & Net Zero	National Gas Crisis Management Team (CMT)	<b>TERMINALS:</b>		Aldbrough – Equinor/ SSE Gas Storage		Mutual Energy
North Sea Transition Authority (NSTA)	<b>Network Emergency Management Team (NEMT)</b>	Easington - Gassco, Langeded	St. Fergus - Ancala (Wood), SAGE	Hatfield Moor – Scottish Power		Northern Ireland NEC
Health and Safety Executive (HSE) <i>[Observing]</i>	Corporate Affairs Response Team (CART)	Easington - Centrica Storage, Rough	St. Fergus - NSMP (PX)	Hilltop – EDF Energy	<b>Gas Distribution Network Operators</b>	SONI
Office of Gas and Electricity Markets (Ofgem)	National Transmission System (NTS) Silver Command	Easington - Perenco, Dimlington	St. Fergus - Shell	Hole House – EDF Energy	Cadent	NI Department for the Economy
		Burton Point - ENI	St. Fergus - National Gas	Holford – UniPer	Northern Gas Networks (NGN)	
		Bacton - Shell	Teesside - Antin (Wood), CATS	Hornsea – SSE Gas Storage	SGN	<b>Republic of Ireland</b>
		Bacton - National Gas	Teesside - PX	Humbly Grove – Humbly Grove Energy	Wales and West Utilities (WWU)	Gas Networks Ireland
		Bacton - SEAL	Barrow - Spirit Energy	Stublach - Storengy		Eirgrid
<b>Network Emergency Coordinator (NEC)</b>	<b>National Grid Electricity System Operator (ESO)</b>	Bacton - Perenco	Somerset Farm			ROI Government Department for Energy & Climate Change
			Angus Energy		<b>Interconnectors</b>	ROI Government Commission for Regulation of Utilities
			<b>LNG TERMINALS:</b>		BBL – BBL Company	
			Milford Haven – South Hook		Interconnector Limited	
			Milford Haven – Dragon			
			Isle of Grain – National Grid			
<b>Energy Networks Association</b>	<b>Electricity System Distribution Network Operators</b>			<b>Shippers</b>	<b>Manx Utilities</b>	

## Appendix 2 – The NEC

**The Network Emergency Coordinator (NEC)** is an independent industry role, established under the Gas Safety (Management) Regulations (GS(M)R) 1996, 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”.

The role of the NEC is currently undertaken by National Gas and is independent from any commercial interests of any organisation within the Gas Industry.

Industry participants such as Transporters and Shippers have a legal duty to cooperate with the NEC, who has the powers to direct the defined duty holders. The arrangements and procedures in place to facilitate these powers are tested annually and this report covers the NEC Industry Exercise 2023, namely ‘Exercise Everest’.



# Appendix 3 – Exercise Aim and Objectives

The aim of this exercise is to demonstrate that the Gas Industry is prepared and able to meet its obligations in the event of a Network Gas Supply Emergency (NGSE). This will be demonstrated by effective two-way communication processes across the industry and its stakeholders; timely and accurate information being shared between participants; and effective emergency strategies being produced and implemented.

In achieving this demonstration, the following objectives will be met:

- Test the management of an emerging gas supply shortage, through the use of warning notices and the establishment of proactive communication channels, then gain an understanding of how these are received by industry (post exercise)
- Test the development and delivery of the pre-emergency strategy, through:
  - the simulated activation of all viable commercial and physical tools
  - the capability of the Primary Transporter to form an accurate situational awareness through industry collaboration
- Practice and enhance processes and tools associated with the interactions between gas and electricity organisations during times of whole energy system stress, supported by active participation from the Electricity System Operator and Electricity Distribution Network Operators
- Test industry’s ability to warn and inform the public through participation of Corporate Affairs’ representatives from the Energy Networks Association, Gas Transporters, the Electricity System Operator and Electricity Network Operators, including changes made to modernise the Public Appeals process
- Test that recommendations from previous industry emergency exercises have been delivered and are effective
- Validate emergency procedures, specifically, National Gas’ E3; the E3 documents of the Distribution Networks; the E1 Network Gas Supply Emergency Procedure and NEC Safety Case

# Appendix 4 – List of Abbreviations and Definitions

## Abbreviations

<b>CTG</b>	Communications Task Group (see <a href="#">App 5 – Industry Working Groups</a> )	<b>GTG</b>	Gas Task Group (see <a href="#">App 5 – Industry Working Groups</a> )
<b>DESNZ</b>	Department for Energy Security and Net Zero (UK Government)	<b>HSE</b>	Health and Safety Executive (UK Government)
<b>DNO</b>	Distribution Network Operator (Electricity) ( <a href="#">see ENA website – Who’s My Network Operator</a> )	<b>LDZ</b>	Local Distribution Zone - within Gas Distribution Networks
<b>E3C</b>	Energy Emergency Executive Committee ( <a href="#">App 5 – Industry Working Groups</a> )	<b>MCM</b>	Million Cubic Metres (Gas unit of measurement for NTS)
<b>EGRI</b>	Electricity & Gas Resilience Interactions Task Group see ( <a href="#">App 5 – Industry Working Groups</a> )	<b>MN</b>	Gas Margins Notice ( <a href="#">see NGT Website</a> )
<b>ENA</b>	Energy Networks Association ( <a href="#">see ENA website</a> )	<b>NCC</b>	National Control Centre (National Gas Transmission)
<b>ENCC</b>	Electricity National Control Centre (National Grid ESO)	<b>NEC</b>	Network Emergency Co-ordinator ( <a href="#">see App 2 - The NEC</a> )
<b>ESO</b>	National Grid Electricity System Operator	<b>NEMT</b>	Network Emergency Management Team (National Gas Transmission)
<b>GBN</b>	Gas Balancing Notification ( <a href="#">see NGT Website</a> )	<b>NGSE</b>	Network Gas Supply Emergency ( <a href="#">see NGT website</a> )
<b>GDN</b>	Gas Distribution Network ( <a href="#">see ENA website – Who’s My Network Operator</a> )	<b>NTS</b>	National Transmission System (National Gas Transmission)
<b>GS(M)R</b>	Gas Safety (Management) Regulations	<b>NTSA</b>	North Sea Transition Authority (UK Government) ( <a href="#">see NTSA website</a> )
<b>GSO</b>	Gas System Operator (National Gas Transmission)	<b>Xoserve</b>	Central Data Service provider (Gas Market) ( <a href="#">see Xoserve website</a> )

# Appendix 4 – List of Abbreviations and Definitions

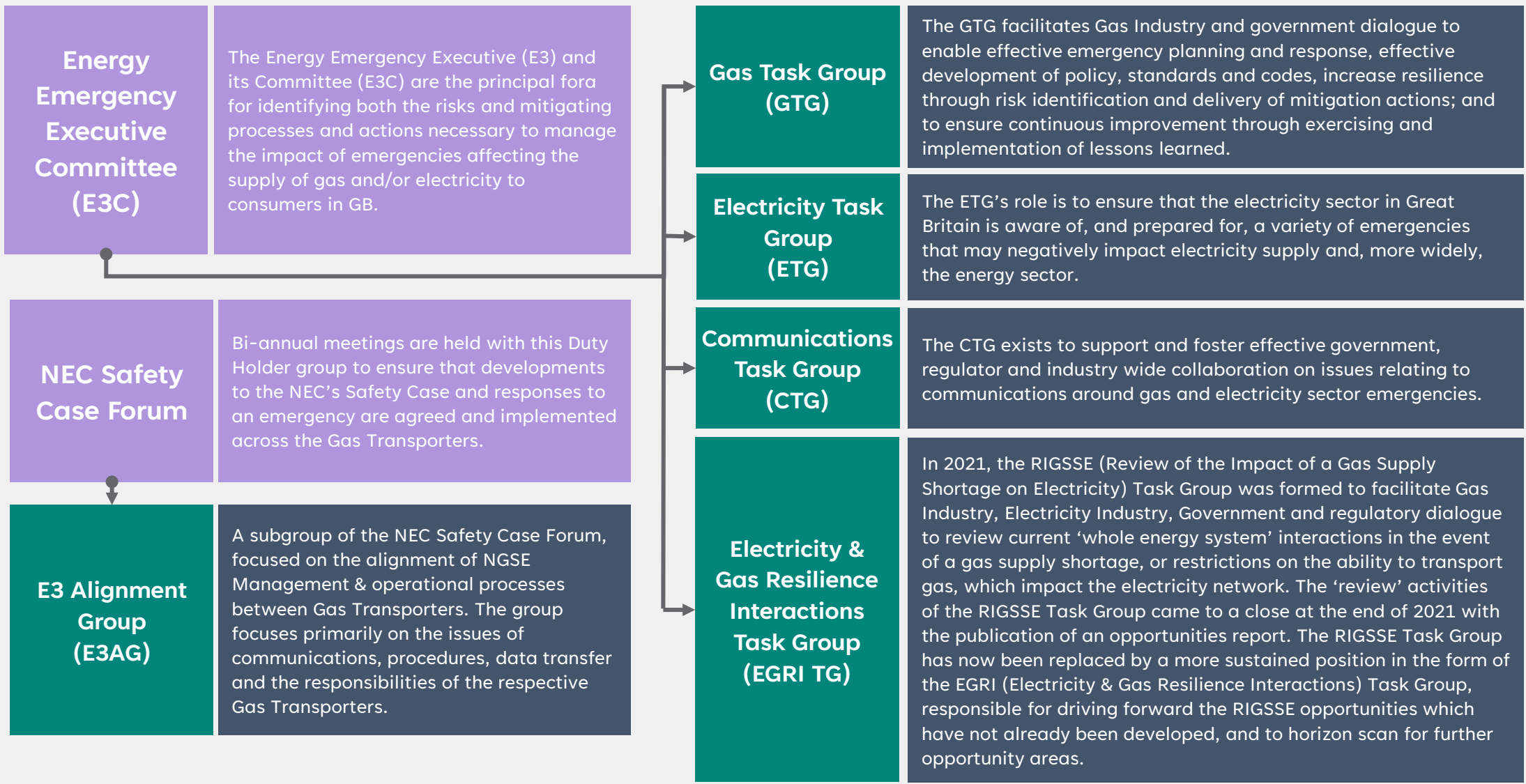
## Definitions

<b>E1 NGSE Procedure</b>	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	<b>GAS Report</b>	Gas Available Status Report which enables the GSO to better request information, via the OGA GAS Portal, to understand gas availability from the offshore and onshore sector
<b>Emergency Specification gas</b>	GS(M)R makes provision to widen the standard gas quality specification to ‘prevent a supply emergency’	<b>OC6</b>	Electricity Operating Code No. 6 details the demand control strategy in the event of insufficient active power generation being available to meet electricity demand ( <a href="#">See NG ESO website</a> )
<b>Embedded generation</b>	Generation (including that fired by gas) which is connected to electricity distribution systems	<b>Netman 1</b>	The name of the form used by Gas Distribution Network operators to share the detail and breakdown of their end of day demand profiles.
<b>ESEC</b>	The Electricity Emergency Supply Code (ESEC) describes steps which the UK Government could take to deal with an electricity supply emergency ( <a href="#">see .Gov.UK website</a> )		





# Appendix 5 – Industry Working Groups



# Appendix 6 – Priority Customers

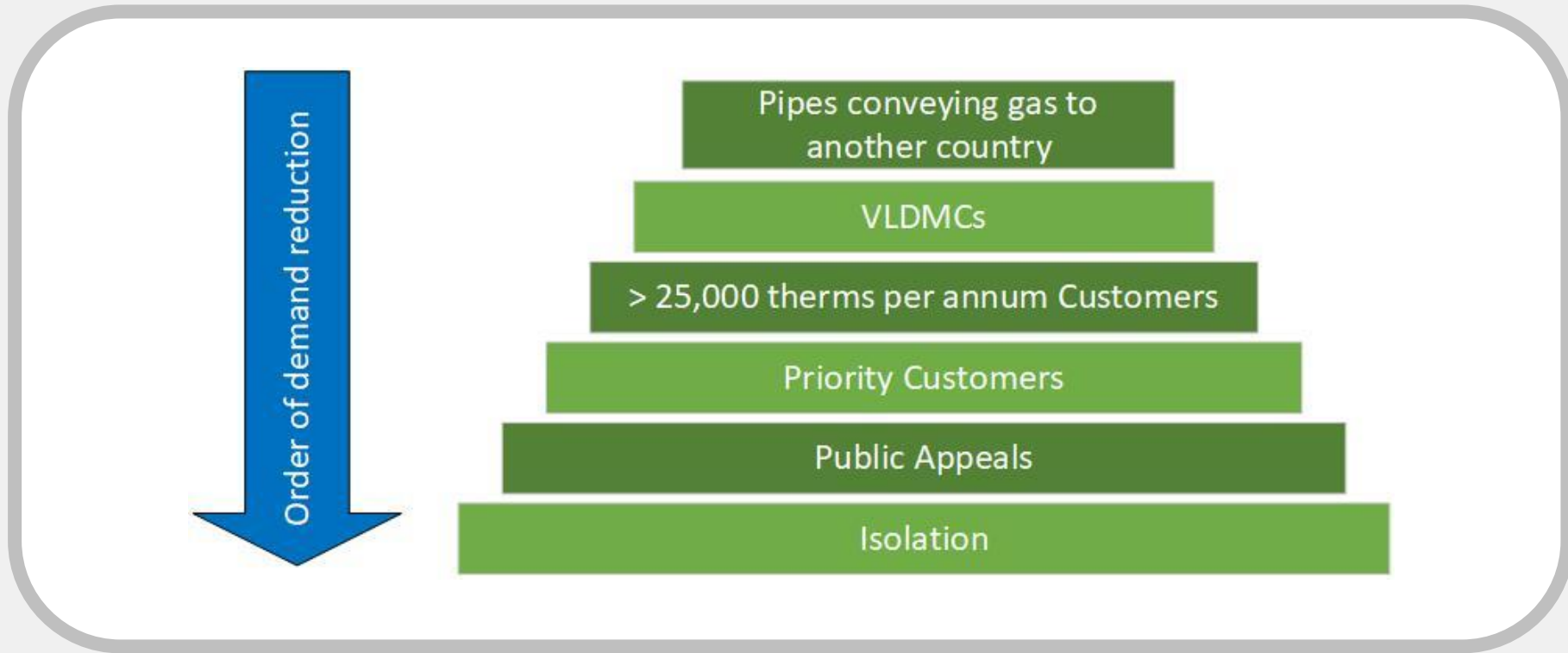
Under Condition 6, Paragraph 15 of the Gas Transporters Standard Licence Conditions, Gas Transporters are obliged to establish, amend and review a list of Priority Customers who should be the last to be directed to cease taking gas in the load shedding hierarchy, where this is necessary for safety reasons.

In accordance with Condition 6, Paragraph 16 and 17 of the Gas Transporters Standard Licence Conditions, the Secretary of State for Business, Energy, and Industrial Strategy (BEIS) (now referred to as DESNZ) 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

# Appendix 7 – Load Shedding Hierarchy

The E1 Network Gas Supply Emergency Procedure sets out the strategy for a ‘graduated and controlled reduction in demand to keep the system securely pressured’ named Load Shedding. Load shedding is a tool available only at Stage 2 of the NGSE emergency framework and is deployed in the order of the hierarchy illustrated below (Figure 10 of the E1 procedure), unless the NEC receives evidence the risk to life is outweighed by an alternative course of action.



**N**etwork  
**E**mergency  
**C**o-ordinator

