An Coimisiún um Rialáil Fóntas
Commission for Regulation of Utilities

National Gas Supply Emergency Plan 2018 - 2022 Ireland

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Executive Summary

EU Member States are required to implement measures to safeguard security of gas supply including, *inter-alia,* the development of an Emergency Plan. This Emergency Plan provides a framework for the interaction between Gas Networks Ireland's (GNI) operational emergency plan (the Natural Gas Emergency Plan – NGEP) and the European measures concerning the security of gas supply and emergency management as provided for under Regulation 2017/1938[1]. This Emergency Plan:

i. contains information of the three crisis levels identified within the Regulation (i.e. "early warning", "alert" and "emergency");

ii. defines the roles and responsibilities of the CRU, Natural Gas Undertakings (NGUs), and other market participants at each crisis level;

iii. identifies measures and actions to be taken to mitigate the potential impact of a gas supply disruption on the supply of electricity generated from gas;[2]

iv. contains detailed procedures and measures to be followed for each crisis level, including the corresponding schemes on information flows;

v. identifies the contribution of market-based measures for coping with situation at "alert" level, and mitigating the situation at "emergency" level;

vi. identifies the contribution of non-market-based measures to be implemented at "emergency" level, and assesses the degree to which the use of such non-market-based measures is necessary to cope with a crisis;

vii. assesses the effects of non-market-based measures and the procedures required to implement them;

viii. describes the mechanisms used to co-operate with other Member States for each crisis level;

ix. details reporting obligations on NGUs at alert and emergency levels; and

x. establishes a list of predefined actions to make gas available in the event of an emergency, including commercial and compensation agreements between the parties involved in such actions.

[1] This document does not consider the potential implications of Brexit on the Irish Gas System

[2] Measures and actions to mitigate the potential impact of a gas supply disruption on district heating are not applicable to Ireland.

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Glossary of Terms and Abbreviations

Abbreviation or Term	Definition or Meaning
CRU	Commission for Regulation of Utilities
DCCAE	Department of Communications, Climate Action and Environment
BECP	Blackstart Emergency Communications Plan
BEIS	Department of Business Energy and Industrial Strategy
DfE	Department for the Economy
EU	European Union
GB	Great Britain
GCG	Gas Co-ordination Group
GEEP	Gas Electricity Emergency Planning
GERT	Gas Emergency Response Team
GNI	Gas Networks Ireland
IBP	Irish Balancing Point
IoM:	Isle of Man
JRC:	Joint Research Centre
NBP	National Balancing Point
NCG:	National Co-ordination Group
NGEM	National Gas Emergency Manager
NGEP	Natural Gas Emergency Plan
NI	Northern Ireland
NGU	Natural Gas Undertaking
NRA	National Regulatory Authority
PSRP:	Power System Restoration Plan
PTL:	Premier Transmission Limited
TSO:	Transmission System Operator
UK	United Kingdom

Related Documents

i. Ireland's 2018 National Risk Assessment;

ii. Regulation (EU) 2017 / 1938 concerning measures to safeguard the security of gas supply.

iii. Ireland's 2016 National Preventive Action Plan - Gas (CER/16/340);

iv. Ireland's 2016 National Gas Supply Emergency Plan (CER/16/338);

1 Introduction

Pursuant to the implementation of EU Regulation 2017/1938 ("the Regulation"), Member States are required to implement measures to safeguard security of gas supply including, inter-alia, the development of an Emergency Plan. The CRU as the designated Competent Authority for Ireland, has prepared this National Gas Supply Emergency Plan (hereafter in this document referred to as the Emergency Plan) in accordance with Article 8 and 10 of the Regulation.

The primary objective of the Emergency Plan is to ensure a consistent and coordinated response to an unplanned gas supply interruption in order to ensure that a gas supply emergency is prevented, or if not possible is resolved expeditiously and competently, thereby minimising effects on the operation of the gas market at a national, regional and European level.

In accordance with Article 10 of the Regulation, this Emergency Plan:

i. contains information of the three crisis levels identified within the Regulation (i.e. "early warning", "alert" and "emergency");

ii. defines the roles and responsibilities of the CRU, Natural Gas Undertakings (NGUs), and other market participants at each crisis level;

iii. identifies measures and actions to be taken to mitigate the potential impact of a gas supply disruption on the supply of electricity generated from gas;[3]

iv. contains detailed procedures and measures to be followed for each crisis level, including the corresponding schemes on information flows;

v. identifies the contribution of market-based measures for coping with situation at "alert" level, and mitigating the situation at "emergency" level;

vi. identifies the contribution of non-market-based measures to be implemented at "emergency" level, and assesses the degree to which the use of such non-market-based measures is necessary to cope with a crisis;

vii. assesses the effects of non-market-based measures and the procedures required to implement them;

[3] Measures and actions to mitigate the potential impact of a gas supply disruption on district heating are not applicable to Ireland.

viii. describes the mechanisms used to co-operate with other Member States for each crisis level;

ix. details reporting obligations on NGUs at alert and emergency levels; and

x. establishes a list of predefined actions to make gas available in the event of an emergency, including commercial and compensation agreements between the parties involved in such actions.

In terms of preparing this Emergency Plan, cognisance was given to the Regulation's requirements that:

- non-market-based measures are to be used only when market-based mechanisms alone can no longer ensure supplies (in particular to protected customers);

- no measures are introduced, which unduly restrict the flow of gas within the internal market, at any time;

- no measures are introduced that are likely to endanger seriously the gas supply situation in another Member State; and

- cross-border access to infrastructure is maintained as far as technically and safely possible in the event of an emergency.

The Emergency Plan as defined by Articles 8 and 10 of the Regulation is based on:

- the Risk Assessment, which reflects market developments (both at a national, regional and European level);

- consultation with industry stakeholders (i.e. NGUs, and organisations representing the interests of household and industrial gas customers); and

- interactions with regional Competent Authorities (i.e. BEIS), and the European Commission.

The Emergency Plan will be up-dated every 4 years in accordance with Article 10 (3) or more frequently if the CRU considers this necessary. The rationale for up-dating the Emergency Plan will be based on the Risk Assessment and the Preventive Action Plan, which also will be up-dated every 4 years, and any other reasons considered prudent by the CRU including where appropriate lessons learned from emergency exercises.

1.1 Context of Emergency Plan

This Emergency Plan provides a framework for the interaction between Gas Networks Ireland's (GNI) operational emergency plan (the Natural Gas Emergency Plan – NGEP) and the European measures concerning the security of gas supply and emergency management as provided for under the Regulation.

GNI's NGEP sets out in detail the operational arrangements to be affected in addressing a natural gas emergency in Ireland, including:

- detailed operational plan containing the procedures to be followed in a gas emergency;
- the roles and responsibilities of energy participants;
- the reporting arrangements and structures;
- contact details;
- communication protocols; and
- instruction and advice templates.

In contrast, this Emergency Plan contains the procedures to be followed when there is a potential or actual national gas supply crisis and focuses on interactions with the EU Commission via the Gas Co-ordination Group (GCG).

1.2 Emergency Plan: High Level Roles and Responsibilities

The roles and responsibilities of the primary actors in the context of this Emergency Plan are outlined below, and are further elaborated upon in Section 4, in conjunction with other relevant market participants.[4]

i. **The Department of Communications, Climate Action and Environment (DCCAE)** is the Government Department responsible for the formulation of energy policy, including security of energy supply.[5] In the context of a gas emergency, DCCAE would assume the role of Lead Government Department. As Lead Department, DCCAE would be responsible for convening and chairing the National Co-ordination Group (NCG), which

[4] Appendix 1 provides a high-level illustration of the roles and responsibilities of the primary actors involved in this Emergency Plan.

[5] In relation to oil, DCCAE is also responsible for the development and implementation of Ireland's oil security policy, which includes contingency planning. Such contingency arrangements are reflected in DCCAE's Oil Emergency Management Handbook.

consists of all Government Departments and the relevant agencies. Essentially, the NCG would co-ordinate the wider, strategic, national response to a major gas emergency. This would include the activation of the Major Emergency Management Framework (MEMF), through which the response of the emergency services is coordinated. The NCG would also co-ordinate the national media response and hold daily press briefings. Additionally, in terms of its interactions with Europe, the DCCAE is a member of the European Gas Co-ordination Group.

Further information regarding national structures for emergency planning in Ireland is available in the Department of Defence Strategic Emergency Planning Guidance document. At a high level, these structures include a Government Task Force on Emergency Planning (chaired by the Minister for Defence), and an Inter-Departmental Working Group on Emergency Planning (chaired by the Office of Emergency Planning), in addition to an Emergency Planning Media Unit (chaired by Government Information Service), and a National Security Committee.

In conducting its role as Lead Government Department, DCCAE may require advance briefing and/or attendance in person at the National Co-ordination Group by relevant organisations.

ii. **The Commission for Regulation of Utilities (CRU)** is the Regulatory Authority for electricity and gas in Ireland. The CRU has, *inter alia*, statutory responsibility for monitoring and ensuring security of gas and electricity supplies. The CRU has been designated by DCCAE as Competent Authority under Article 3(3) of the Regulation to ensure the implementation of the measures set out in the Regulation, and is also invited to attend European Gas Co-ordination Group meetings.[6] Additionally, the CRU has responsibility for the regulatory regime relating to gas and electricity safety in Ireland.

iii. **GNI[7]** is the gas Transmission System Operator (TSO) for Ireland with responsibility for system operation, network planning and market arrangements. The CRU has appointed GNI as the **National Gas Emergency Manager (NGEM).** The NGEM is responsible for the practical and operational management of a gas supply emergency. Additionally, GNI

[6] In accordance with SI 336 (2013) EUROPEAN UNION (SECURITY OF NATURAL GAS SUPPLY), the CRU has been formally designated as Ireland's Competent Authority for the implementation of Regulation (EU) 994/2010.

[7] In accordance with national legislation, S.I. No. 697/2007 - European Communities (Security of Natural Gas Supply) Regulations 2007, the CRU appointed GNI as the NGEM. In accordance with EU Regulation 994/2010 the CRU appointed GNI as the Crisis Manager.

is responsible, under its licence from the CRU, for the development of the NGEP, which is approved by the CRU. An important feature of GNI's NGEP is the **Gas Emergency Response Team (GERT)** which is convened by the NGEM. The GERT is chaired by the NGEM and comprises GNI, CRU, EirGrid (the electricity TSO), and DCCAE. The GERT is responsible for managing the operational response to the gas supply emergency. The CRU has also appointed GNI as the **Crisis Manager** in accordance with Article 10 of the Regulation. The Crisis Manager will provide technical liaison between the NGEM, the National Co-ordination Group and the European Gas Co-ordination Group. This role may include the provision of technical updates at NCG press briefings.

iv. **EirGrid:** EirGrid is Ireland's electricity TSO, and will decide during a gas supply emergency, which power stations if required should fuel switch, reduce output or come off load. In order to facilitate communications during a gas emergency, EirGrid and GNI have developed Joint Procedures for the Control of Emergencies. With reference to electricity emergencies, EirGrid have also developed a Blackstart Emergency Communications Plan (BECP), and a Power System Restoration Plan (PSRP).[8]

v. **ESB Networks** manages the operation of the electricity distribution network in Ireland and provides the interface with the distribution network operator in Northern Ireland, Northern Ireland Electricity (NIE).

vi. **Energy Press Officers Network** (EPON): The EPON will consist of communication experts from DCCAE, CRU, EirGrid, GNI and ESB Networks, as required. The purpose of the EPON is to ensure the delivery of a consistent national media response in the event of an emergency. In the event of a Natural Gas Emergency, GNI will co-ordinate the national media response through the EPON. In the event that the government's National Co-ordination Group (NCG) is convened, the NCG will manage the national media response.

[8] The BECP sets out the appropriate communication and stakeholder management procedures to be followed in the event of a widespread electricity system blackout. In contrast, the PSRP outlines the detailed operational response to a system blackout.

1.3 The Natural Gas Emergency Plan (NGEP)

The Natural Gas Emergency Plan (NGEP) is the industry procedure for managing a natural gas emergency in Ireland and provides detail on the role of the National Gas Emergency Manager (NGEM).

The NGEP is intended to provide for the following:

- the appointment of the National Gas Emergency Manager (NGEM).
- procedures for the operator of a gas transmission system to declare a natural gas emergency.
- the roles and responsibilities of the relevant stakeholders involved in the emergency response.
- measures to minimise the impact on electricity generation and on the safe, secure, reliable operation of the national electricity system in so far as that system is dependent on natural gas.
- measures to ensure that supplies for domestic customers (i.e. protected customers) and in so far as it is possible other customers that cannot switch their gas consumption to other energy sources are protected in the event of an emergency.

The Natural Gas Emergency Plan (NGEP) is prepared by Gas Networks Ireland (GNI) by direction of the Commission for Regulation of Utilities (CRU) and is subject to approval by the CRU. GNI has been appointed as the National Gas Emergency Manager (NGEM) by the CRU for the purposes of managing a natural gas emergency in Ireland.

A natural gas emergency could be caused by:

a) Insufficient gas supplies available to the gas transportation network (i.e. demand exceeding supply).

b) A critical transportation constraint (this may occur where there is sufficient gas available but due to a constraint on the transmission network the gas cannot be transported to the required location).

c) Off-specification natural gas entering the transportation network (including odourant failure).

To provide a measured, appropriate and co-ordinated response to a natural gas emergency, four stages of emergency have been defined. The NGEM may request emergency actions are completed out of sequence if deemed appropriate in the interests of health and safety.

The four stages of a natural gas emergency as per the NGEP are:

- Stage 1 – Potential Emergency
- Stage 2 – Emergency Declared and Load Shedding
- Stage 3 – Allocation and Isolation
- Stage 4 – Restoration

The four stages of emergency in the NGEP sit alongside the different crisis levels defined in the Regulation. Table 1 shows the different crisis levels and the corresponding stages of the NGEP.

EU Regulation Crisis Level	**Natural Gas Emergency Plan (NGEP) Stage**
Early Warning	Emergency not declared.
Alert	Stage 1 - Potential
Emergency	Stage 2 – Emergency Declared and Load Shedding
	Stage 3 – Allocation and Isolation
	Stage 4 - Restoration

Table 1: EU Crisis Levels and Stages of the Natural Gas Emergency Plan

A summary of the major events which can trigger a natural gas emergency are shown in Figure 1. This list is not exhaustive, recognising that other events can occur.

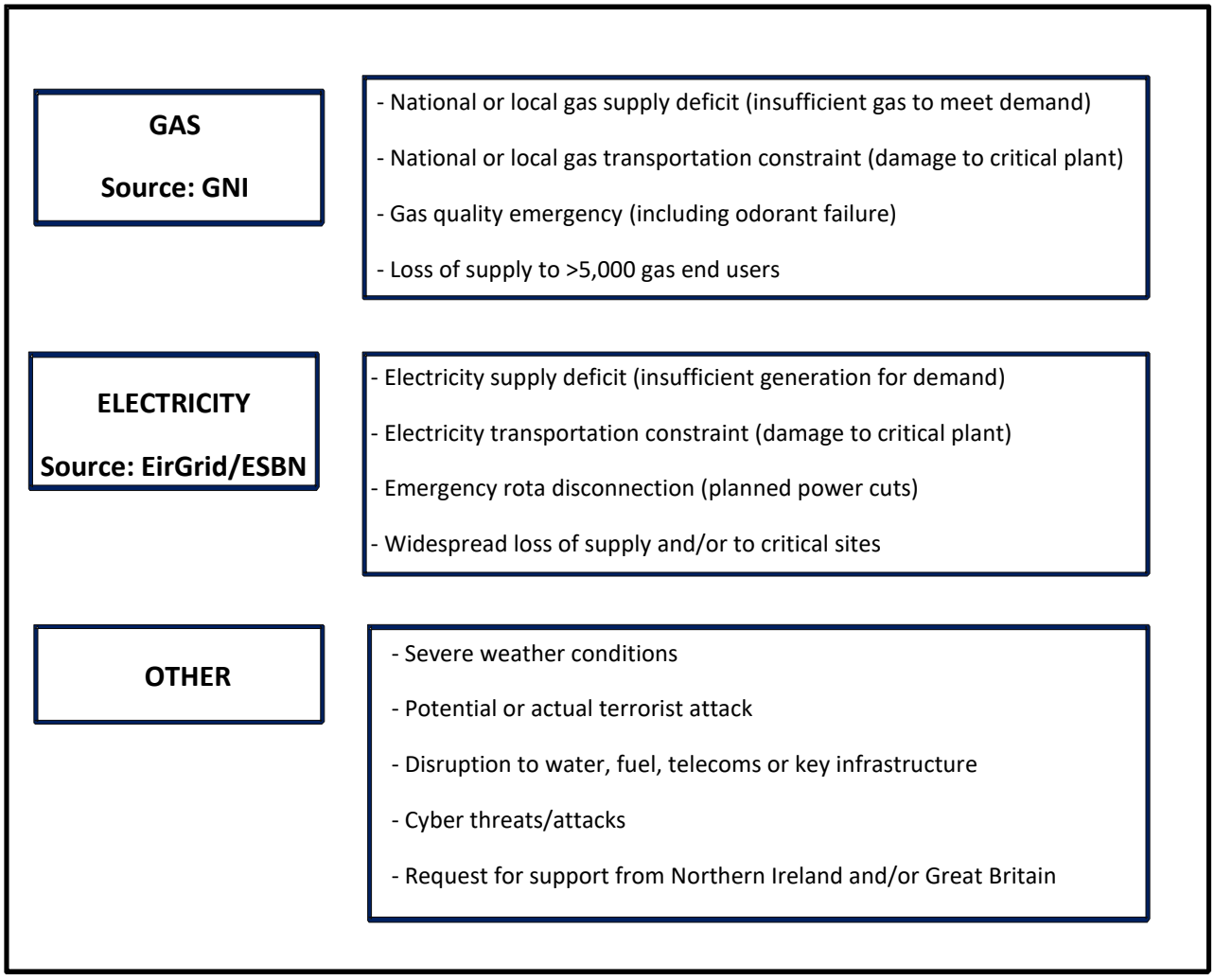


Figure 1: Triggers of a natural gas emergency

These triggers are intended to provide guidance to the NGEM on the declaration of an emergency and thus activating the relevant provisions of the NGEP. There may be other types of incident that would require an emergency response and the activation of the NGEP; the NGEM has discretion to declare an emergency if so required.

The emergency framework in place in anticipation of or following the declaration of an emergency consists of emergency planning and operational response.

Emergency planning for the purposes of the NGEP is undertaken by GNI in consultation with the gas industry, electricity industry, the CRU and government. The consultation is undertaken at the **Gas Electricity Emergency Planning Group (GEEP)** which meets twice per year.

Operational response is undertaken by the **Gas Emergency Response Team (GERT)**. This body will be chaired by the NGEM and will have a core membership of DCCAE, CRU, GNI, and EirGrid. The GERT will be established in the event of a potential or actual emergency and will support the NGEM in the implementation of the NGEP. The GERT may also be established as required to test the effectiveness of the arrangements. The members of the GERT will interface with and provide information to the NGEM and be responsible for implementing the directions of the NGEM. The measures to be adopted for managing a natural gas emergency are described in Section 2 below.

The operation of the NGEP during an emergency is outlined in the following Figure 2 and summarised as follows:

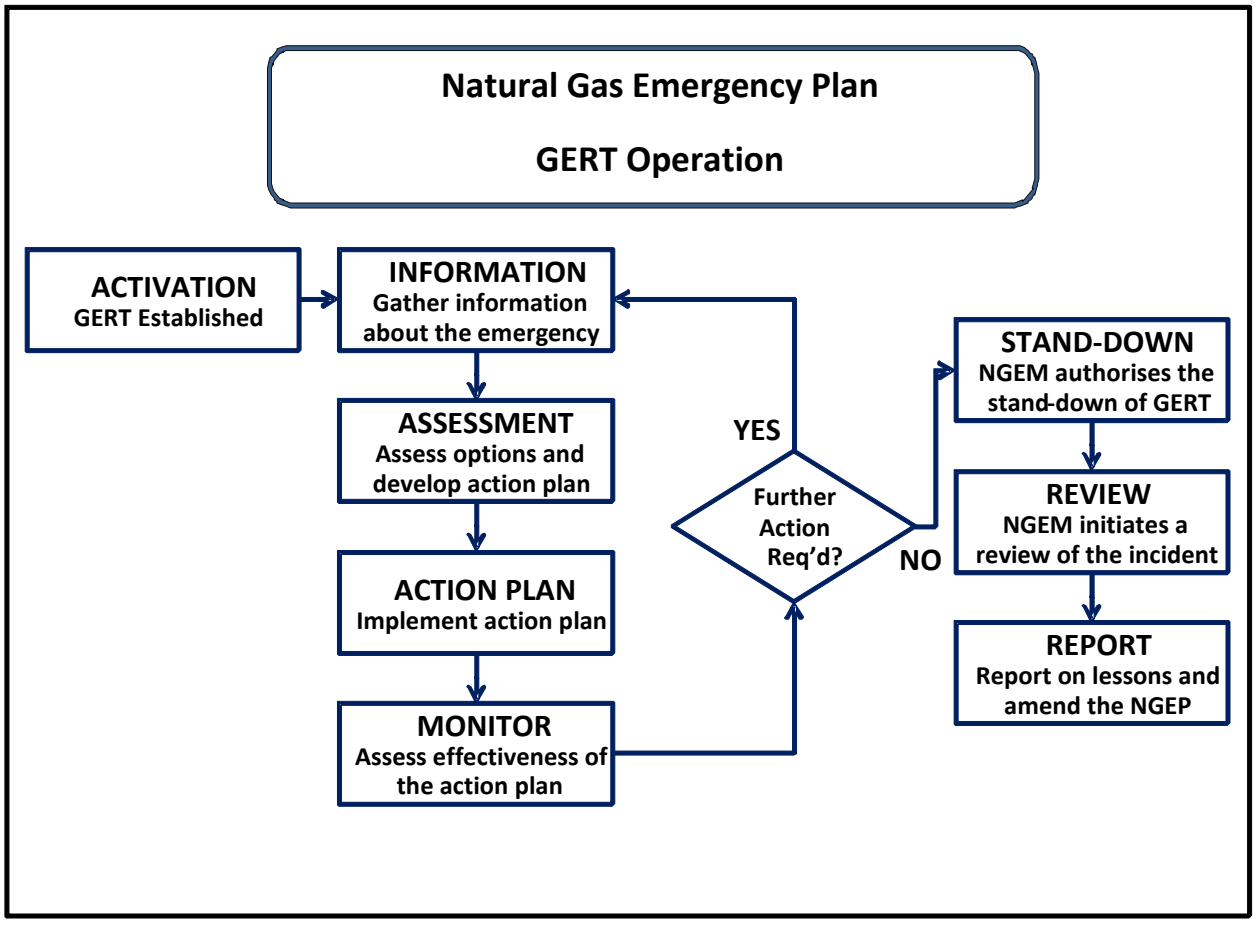


Figure 2: GERT Operation

a) Activation: the NGEM will determine the regularity of the GERT meetings depending on the nature and severity of the emergency.

b) Information/Assessment: the Support Team will gather information on the emergency, assess the extent and consequences and produce a Situation Report (SITREP).

c) Action Plan: the Support Team will prepare an Action Plan and the NGEM with the support of the GERT will review and, if appropriate, approve the Action Plan.

d) Monitor: the Support Team will monitor the effectiveness of the Action Plan on behalf of the NGEM and will report back to the GERT as required.

e) Stand Down: if the NGEM confirms that the emergency has been resolved then he/she can authorise for the GERT to stand down.

f) Review: after any emergency requiring the establishment of the GERT the NGEM will arrange for a review of the emergency to be undertaken to ensure any learning points are captured.

g) Report: a report on the emergency will be prepared and will normally be provided to the GERT by the NGEM and recommendations will be incorporated into the NGEP.

1.4 Crisis Manager

The CRU has designated GNI as the Crisis Manager in accordance with Article 10 of the Regulation. The Crisis Manager will provide technical liaison between the NGEM, the National Co-ordination Group and the European Gas Co-ordination Group. This role may include the provision of technical updates at NCG press briefings. Further information about GNI's responsibilities is provided in the section below.

1.5 Crisis Levels

Article 11(1) of the Regulation identified three potential crisis levels that are to be activated in terms of addressing a threat to gas supplies (subject to the scale of the crisis), namely:

- Level 1: early warning;
- Level 2: alert; and
- Level 3: emergency.

The objective of this section is to elaborate upon these crisis levels and identify the various events that would trigger a particular crisis level.

As described in Section 1, the EU crisis levels sit alongside the different classification levels of the Natural Gas Emergency Plan (NGEP). Table 2.1 shows the different crisis levels and the corresponding stages of the NGEP and indicates some high-level actions at each stage of the NGEP that may be implemented by GNI as part of the emergency strategy authorised by the NGEM.

EU Crisis Level and NGEP Emergency Stages.		
EU Regulation Crisis Level	Natural Gas Emergency Plan (NGEP) Stage	High level actions
Early Warning	Emergency not declared.	Increase system line-pack where possible; cease all non-essential maintenance; advise stakeholders as appropriate.
Alert	Stage 1	Seek voluntary increase in indigenous production and storage

		withdrawals (where present); seek voluntary load shedding by fuel switching.
Emergency	Stage 2	Direct maximisation of indigenous production and storage withdrawals (where present); direct load shedding of gas-fired power generators (by fuel switching) and large industry.
	Stage 3	Allocate existing gas supplies to protected customers and isolate as required.
	Stage 4	Emergency ended; restore gas supplies in an orderly and safe manner.

Table 2: EU Crisis Levels and Stages of the Natural Gas Emergency Plan

1.5.1 Early Warning

An 'early warning' is declared[9] where there is concrete, serious and reliable information that an event may occur, which is likely to result in a significant deterioration of Irish gas supplies and is likely to lead to the 'alert' or 'emergency' level being triggered. This could be, for example, a problem with the European gas supply chain or an Irish or UK infrastructure problem, which has the potential to impact on Irish gas supplies. Consequently, the CRU, as the designated Competent Authority, will declare an early warning based upon one or more of the following scenarios:

- information provided by GNI to the CRU, which in the CRU's opinion warrants declaration of an early warning;
- an announcement and/or statement by the European Gas Co-ordination Group (GCG) of potential threats to the security of energy supply in Europe, which in the CRU's opinion warrants the declaration of an early warning in Ireland;

[9] The declaration of a crisis level (i.e. early warning, alert and emergency) refers to the scenario whereby the CRU is responsible for informing the EU Commission of an emergency. The NGEM shall still be required to declare an emergency in accordance with the Natural Gas Emergency Plan. The declaration of a crisis level by the CRU may take the form of a written notification to the EU Commission via the European Gas Co-ordination Group email circulation list, or any other communication method deemed appropriate by the CRU.

- an announcement and/or statement by BEIS of potential threats to the security of energy supply in the GB, which in the CRU's opinion warrants the declaration of an early warning in Ireland;

- the issuance of a Margins Notice or Gas Deficit Warning (GDW) in the UK by National Grid, which in the CRU's opinion warrants the declaration of an early warning in Ireland; and

- any other scenario, which in the CRU's opinion requires the declaration of an early warning.

1.5.2 Alert

An 'alert' is declared where a supply disruption or exceptionally high gas demand occurs, resulting in a significant deterioration of the supply situation, but can be addressed through the utilisation of market-based measures. This could be as a result of an escalation of an early warning situation or an event as outlined above at early warning level but with a higher likelihood of impacting on gas supplies. At this crisis level it is anticipated that there are market impacts (e.g. higher NBP/IBP prices) but that the market is capable of coping with the event. The issuance of an alert in Ireland by the CRU, as the designated Competent Authority, will be based upon one or more of the following scenarios:

- information provided by GNI to the CRU, which in the CRU's opinion warrants the declaration of an alert;

- an announcement and/or statement by the European Gas Co-ordination Group (GCG), which in the CRU's opinion warrants the declaration of an alert in Ireland;

- an announcement and/or statement by BEIS, which in the CRU's opinion warrants the declaration of an alert in Ireland;

- the issuance of a Margins Notice or Gas Deficit Warning (GDW) in the UK by National Grid, which in the CRU's opinion warrants the declaration of an alert in Ireland; and

- any other scenario, which in the CRU's opinion requires the declaration of an alert.

1.5.3 Emergency

An ‘emergency’ is declared in the event of exceptionally high gas demand, significant supply disruption or other significant deterioration of the supply situation and in the event that all relevant market-based measures have been implemented but the supply of gas is insufficient to meet the remaining gas demand so that non-market-based measures have to be additionally introduced with a view, in particular, to safeguarding gas supplies to protected customers in accordance with Article 6 of the Regulation. At this crisis level it is necessary for the NGEM to take control and implement GNI’s NGEP.

The declaration of an emergency in Ireland by the CRU, as the designated Competent Authority, will be based upon one or more of the following scenarios:

- information provided by the NGEM to the CRU, which in the CRU’s opinion warrants the declaration of an emergency;

- an announcement and/or statement by the European Gas Co-ordination Group (GCG), which in the CRU’s opinion warrants the declaration of an emergency in Ireland;

- an announcement and/or statement by BEIS, which in the CRU’s opinion warrants the declaration of an emergency in Ireland;

- the issuance of a Margins Notice or Gas Deficit Warning (GDW) in the UK by National Grid, which in the CRU’s opinion warrants the declaration of an emergency in Ireland;

- an announcement and/or statement by the European Commission that a regional or Union emergency has been declared in accordance with Article 12 of the Regulation; and

- any other scenario, which in the CRU’s opinion requires the declaration of an emergency.

2 Measures to be adopted per Crisis Level

Ireland's Preventive Action Plan examined the feasibility of various market and non-market-based measures and their immediate feasibility in terms of addressing a gas supply crisis in Ireland. This section examines the current market and non-market-based measures that were identified as feasible within the Preventive Action Plan and could be applied within Ireland's Emergency Plan 2018-22.

2.1 Market-based Measures

Article 9 (3) specifies that "the preventive action plan shall be based primarily on market-based measures and shall not put an undue burden on natural gas undertakings, or negatively impact on the functioning of the internal market in gas." A non-exhaustive list of market-based supply side and demand side measures is presented in Table 3: Market-based Measures, which the Competent Authority takes into account in order to improve security of gas supplies

Supply Side Measures	Demand Side Measures
Increased production flexibility	Fuel switching
Facilitating the integration of gas from renewable energy sources	Use of interruptible contracts
Commercial gas storage	Voluntary firm load shedding
LNG terminal capacity	Increased efficiency
Diversification of gas supplies	Increased use of renewable energy sources
Reverse flows	
Coordinated dispatching by TSO	
Use of long-term and short-term contracts	
Investment in infrastructure	
Contractual arrangements to ensure gas supply	

Table 3: Market-based Measures

In the event that an alert is declared as a result of a potential shortage of gas supplies in the UK, it is likely that the gas price at the National Balancing Point (NBP) will increase. This should result in the maximisation of indigenous Irish gas production and storage on a voluntary basis as the market responds to the gas price. If the alert is due to an infrastructure problem in Ireland, there may not be an

impact on the NBP. However, prices at the Irish Balancing Point (IBP) may increase, which may incentivise the market to react. Nonetheless, it should be noted that the IBP has lower levels of liquidity than the NBP.

2.1.1 Market-based Supply Side Measures

With reference to market-based supply side measures, Ireland has some limited production capacity in Kinsale that can be drawn on to increase supply. In the cold periods of January and December 2010 a combination of production and storage gas from the Kinsale storage facility contributed 16% of Ireland total demand. However, this facility is now in blowdown mode and is due to close in 2020. While this facility remains operational, there may be some limited flexibility available to the market to increase supply. Without this source of gas, the Moffat entry point would have been strained and unable to deliver the gas required to meet the demand. Additionally, both interconnectors from Moffat (IC1 and IC2) were required to be in operation to deliver the quantities of gas required to meet Irish demand.

Ireland now has indigenous production capacity at the Corrib gas field which was not available in 2010. In the event of such a severe weather event the presence of gas flows from Corrib would help limit any impact. It is clear from the market operation during more recent cold spells (March 2018) that suppliers react to market signals (i.e. high NBP prices), with indigenous gas production from Corrib and Kinsale operating at the maximum available output.

Given Ireland's geographical location, on the periphery of Europe, measures such as reverse flows and coordinated dispatching are not feasible supply side market-based measures. Furthermore, the use of long term and short-term contracts do not protect Ireland against low supply in the UK, or major infrastructure risks. However, it should be noted that Ireland's connection to the highly liquid NBP trading hub can result in market-based pricing signals to industrial customers at times of supply shortage.

Gas from renewable resources (e.g. biogas) is still in its infancy in Ireland and is used mainly for small scale Combined Heat and Power (CHP). However, the first renewable gas injection facility in Ireland is under construction in Cush Co. Kildare at present with the aim of commissioning in Q4 2019. The Network Entry Facility for this project is designed to inject up to 1,200 m3/hr of renewable gas and will act as a template for following project designs.

It is expected that biomethane could play a significant role in diversity of gas supplies in the future. In respect of this, the CRU has recently approved

amendments to the GNI connections policy which facilitate the connection of renewable natural gas facilities to the natural gas network.

2.1.2 Market-based Demand Side Measures

2.1.2.1 Fuel Switching as a market-based demand side measure

With an average of 50% of gas in Ireland being used for power generation in 2016, Ireland currently utilises fuel switching as a non-market-based demand-side measure for managing the gas system and protecting smaller, vulnerable and priority gas customers. In 2009, the CRU issued a Decision Paper – *Secondary Fuel Obligations on Licensed Generation Capacity in the Republic of Ireland* (CER/09/001). This paper specifies the level of primary and secondary fuel stocks electricity generators are required to maintain.

Since 2009, significant developments have taken place within Ireland's electricity and gas markets including increased renewable generation, the commissioning of the East West Interconnector (EWIC), and the first gas flows from the Corrib gas field. Given such developments, coupled with concerns regarding gas security of supply at a European level (due to a potential interruption of Russian gas supplies), discussions are ongoing between CRU and Eirgrid (Ireland's electricity TSO) to identify whether changes to the existing fuel stock obligations on electricity generators are merited. In addition, the DCCAE has engaged with CRU, GNI, and Eirgrid to help identify ways to improve market resilience.

Regarding fuel switching, CRU previously consulted on whether related market-based demand side measures could be introduced to address a gas shortage. EirGrid noted that such market measures should not be introduced to address a gas shortage in the interests of safeguarding the power system. It noted that while fuel switching provisions are in place in accordance with CER/09/001, it should only be considered as an emergency response measure due to the increased risk of electricity outages if fuel switching fails, and that the need for fuel switching must be co-ordinated by the gas and electricity system operators, as required.

2.1.2.2 Third Party Access Services as a market-based demand side measure

Article 14 of Regulation 715 of 2009 requires that transmission system operators provide both firm and interruptible third-party access services. Consequently in 2012, the CRU consulted on introducing an interruptible capacity product at entry and exit points. In respect of interruptible at exit, there was no great support for this product, from respondents to the consultation. At the time, it was considered that given that capacity congestion at the exit was unlikely, the price difference

between a firm and interruptible product would be negligible, and hence market demand would be negligible.

2.2 Non-Market-based Measures

In the event that the market-based measures are not sufficient to meet demand it will be necessary to resort to the utilisation of non-market-based measures. In this circumstance the CRU may declare an emergency crisis level. At this stage the NGEM will then declare Stage 3 'emergency' of GNI's NGEP which provides for some non-market-based measures. Specifically, this will involve the following steps:

1. Maximisation of the use of line-pack on the network.
2. An instruction to gas production facilities and storage to maximise indigenous gas supplies (if available).
3. If the system cannot be rebalanced as a result of these steps firm load shedding will commence.
4. GNI will initiate load shedding on behalf of the NGEM by issuing the following emergency instructions:
    - **Instruction** to Isle of Man and Northern Ireland requiring reductions in their overall gas demand.
    - **Instruction** to EirGrid to co-ordinate reductions in gas demand for the gas-fired power generation sector.
    - **Instruction** to gas-fired power generation shippers, to re-nominate gas off-takes based on requirements as co-ordinated by EirGrid.
5. In the event that the supply/demand imbalance is deteriorating, the NGEM will escalate the emergency, and commence gas allocations and isolations.

The detailed steps of this emergency stage are set out in GNI's NGEP.

Fuel switching represents the most immediate non-market-based measures that can be utilised to ensure gas security of supply. Power stations in Ireland comprise 50% of the gas demand and can be instructed by EirGrid to run on a secondary fuel in order to prevent or respond to a gas emergency situation.

Arrangements are currently in place, which ensure that gas generators in Ireland are able to switch from their primary fuel to their secondary fuel while operating continuously and run on their secondary fuel for up to 5 days. The secondary fuel capability includes the following measures:

- Electricity generating plants whose primary fuel is gas are required to be able to run on a secondary fuel,
- Such plants must also ensure that sufficient stocks of secondary fuels

are held on site,
- Electricity generating plants whose primary fuel is not gas (such as oil and coal fired plants) are required to hold additional primary fuel in storage, and;
- EirGrid monitor the capability of generators and have commenced a schedule of periodic planned tests.

In order to ramp down in a controlled manner and maintain control, EirGrid stress that only two plants could be ramped down in parallel and these plants would have to be ramped down over the course of five hours. Power demand model analysis by GNI suggests that on a peak day there would be approximately 12 gas plants in merit. When considering the operational limitations of ramping down, as raised by EirGrid, 30 hours would be required to switch these 12 plants to their secondary fuel. According to GNI's calculations, this ramping down would require gas consumption equivalent to 60% of the peak day consumption level for the power generation sector.

Daily metered customers could also provide demand side response to a potential emergency. Other non-market-based measures include increased production and storage withdrawal are provided for in Ireland's National Emergency Plan. With reference to production, Corrib can meet approximately 28% of Ireland's peak day gas demand in 2018/19.

It should be noted also that the second interconnector from Moffat (IC2) was built for security of supply reasons. It provides 100% back up capacity and is being underwritten by the Irish customer. It has always been assumed that in the event of loss of supply at Moffat the linepack in IC1 and IC2 could supply the Irish demand on a 1 in 50 winter for five days, assuming all power stations could be fuel switched in 5 hours. This does not allow for any supply to Northern Ireland through the SNP, which is connected to IC2. However, the 2016 UK Ireland Joint Risk Assessment considered the impact of Northern Ireland having access to linepack on IC2. The adoption of this regional approach between the UK and Ireland enables Ireland to meet the N-1 Standard, as required by the Regulation, while providing access to line-pack on the IC2 to NI.

2.3 Financial Compensation Measures

The NGEM may issue directions to NGUs regarding the production, use, supply, shipping, storage, transmission and distribution of natural gas in order to respond to a natural gas emergency. However, in terms of compensating NGUs for costs incurred during an emergency (when complying with directions of the NGEM), the Irish Code of Operations only deals with the offtake of gas belonging to another shipper. Specifically, in the event of an Emergency, if a shipper's gas offtake is

reduced at an exit or supply point, and off taken by another shipper, the latter shipper is required to reimburse the former shipper, via the TSO, for this gas.

Pursuant to Article 13 of EU Regulation 2017/1938, the United Kingdom and Ireland are in the process of developing arrangements for Solidarity measures. These measures are designed to facilitate the sharing of gas in the event of an emergency where the UK or Ireland request solidarity.

2.4 Cyber Security

In July 2016, the European Union formally adopted Directive 2016/1148 for security of network and information systems. The Directive was published in the Official Journal of the European Union on 19th July and came into effect on August 8th, meaning a transposition deadline of 9th May 2018. The main objective of the Directive is to ensure that there is a common high level of cyber security across Member States. This is to be accomplished by several means, including those around the protection of critical national infrastructure. The Directive requires Member States to impose a series of requirements on companies in sectors deemed critical to the functioning of society and the economy. These entities are termed 'Operators of Essential Services' in the Directive. These security measures take the form of technical and procedural cyber security requirements and binding reporting obligations. In addition, the Directive seeks to improve the co-operation between and across member states, through public and private sector entities in relation to incidents that affect network and information systems.

In 2014 GNI commissioned an audit of certain systems with respect to alignment with the IEC 62443 SL3 cyber security standard for industrial automation and control systems. Following on from the audit a number of gaps were identified which were addressed over two phases to ensure compliance with industry best practice. A further audit carried out in 2017 forms the basis of a security remediation project with a timeframe to completion of 5-6 years.

GNI has also contributed to the DCCAE consultation on the NIS Directive Security Measures and Incident Reporting for Operators of Essential Services.

2.5 Measures and procedures per Crisis level

This section presents high level measures and procedures applicable to each crisis level and outlines predefined actions regarding commercial arrangements to make gas available in the event of an emergency. While this section endeavours to provide an accurate description of the procedures to be followed during a crisis,

the CRU, as the designated Competent Authority, reserves the right to deviate from the outlined procedures in the event of exceptional circumstances, and shall inform the European Commission, in accordance with 11(4) of the Regulation.

2.5.1 Early Warning

Early Warning Procedure[10]

- Stage 1: The CRU declares an early warning, based on the scenarios outlined in Section 2.1 of this document.

- Stage 2: The CRU informs the Crisis Manager who in turn instructs GNI to issue an early warning to NGUs. The CRU also informs DCCAE who may place the National Co-ordination Group on standby or decide to convene a meeting of the National Co-ordination Group (NCG).

- Stage 3: The Crisis Manager submits a Situation Report to the CRU.

- Stage 4: The CRU will inform the European Commission via the Gas Co-ordination Group (GCG).

- Stage 5: The CRU reviews the Situation Report, and decides whether to remove, maintain or escalate the early warning crisis level.

    a. Remove: The early warning is revoked, and the Crisis Manager informs the GNI who in turn informs the NGUs. The Crisis Manager prepares a Closing Report for the CRU.

    b. Maintain: The Crisis Manager provides regular updates to the CRU. Following a review of update(s), the CRU will issue a decision as to whether to remove (refer to point a) or escalate crisis level (refer to point c).

    c. Escalate: The CRU declares an alert or emergency.

See Appendix 2 for a flowchart of the above.

[10] Appendix 2 provides a flow chart of the early warning procedure.

2.5.2 Alert Level

Alert Procedure[11]

- Stage 1: The CRU declares an alert, based on the scenarios outlined in Section 2.2 of this document.

- Stage 2: The CRU informs the Crisis Manager who in turn informs GNI who issues an alert to NGUs. The CRU also informs DCCAE who may place the National Co-ordination Group on standby or decide to convene a meeting of the National Co-ordination Group (NCG).

- Stage 3: The Crisis Manager submits a Situation Report and Action Plan to the CRU.

- Stage 4: The CRU reviews the Situation Report and Action Plan.

- Stage 5: The CRU will inform the European Commission via the European Gas Co-ordination Group (GCG).
.
- Stage 6: The Crisis Manager monitors market-based measures effect on gas supplies and provides update to CRU.

- Stage 7: CRU decides whether to remove, maintain or escalate the alert crisis level.

    a. Remove: The CRU informs the Crisis Manager that the alert is revoked. The Crisis Manager informs GNI who in turn informs the NGUs accordingly. Additionally, the Crisis Manager prepares a Closing Report for the CRU.

    b. Maintain: The Crisis Manager provides regular updates to the CRU. Following a review of update(s), the CRU will issue a decision as to whether to remove (refer to point a) or escalate crisis level (refer to point c).

    c. Escalate: The CRU declares an emergency.

See Appendix 3 for a flowchart of the above.

[11] Appendix 3 provides a flow chart of the alert warning procedure.

2.5.3 Emergency Level

Emergency Procedure[12]

- Stage 1: The CRU declares an emergency, based on the scenarios outlined in Section 2.3 of this document.

- Stage 2: The CRU informs the NGEM who convenes the GERT.

- Stage 3: The CRU informs the Crisis Manager who in turn informs GNI and GNI informs the NGUs.

- Stage 4: The CRU notifies the European Commission via the European Gas Co-ordination Group (GCG).

- Stage 5: The NGEM, in conjunction with GERT members, submits a Situation Report and Action Plan to the CRU. CRU approves Action Plan (if appropriate).
  .
- Stage 6: The NGEM puts the NGEP into effect.

- Stage 7: The Crisis Manager liaises between the NGEM, GNI, DCCAE, and the CRU and provides situation reports to the GERT.

- Stage 8: CRU decides whether to remove or maintain the emergency crisis level.
    a. Remove: The alert is removed, and the CRU informs the Crisis Manager, EU Commission (via the European Gas Co-ordination Group). The Crisis Manager informs GNI who in turn informs the NGUs accordingly. Additionally, the Crisis Manager, in consultation with the NGEM and other relevant parties prepares a Closing Report for the CRU.

    b. Maintain: The Crisis Manager, in consultation with the NGEM, provides regular updates to the CRU. Following a review of update(s) and discussions with the GERT, the CRU will issue a decision as to whether to remove (refer to point a) or maintain crisis level.

See Appendix 4 for a flowchart of the above.

[12] Appendix 4 provides a flow chart of the emergency procedure.

2.6 Specific Measures for Electricity and District Heating

Specific measures and actions to mitigate the likely impact of a disruption of gas supply in the electricity sector are agreed between GNI and the electricity TSO EirGrid. The detail on these measures is described in the NGEP and in procedures agreed between the gas and electricity TSOs.

Specific measures and actions to mitigate the potential impact of a gas supply disruption to district heating is not applicable to Ireland.

3 Role & Responsibilities of different actors (Obligations on NGUs & Relevant Market Participants)

In order to ensure transparency and accountability during a gas security of supply crisis, this section identifies the relevant parties involved, and their respective responsibilities at an early warning, alert, and emergency crisis level.[13]

3.1 Early Warning

Table 4: Roles and Responsibilities – Early Warning Level outlines the general roles and responsibilities of all parties involved at an early warning crisis level.

Participant	Role & Responsibilities
CRU	• Determine whether an early warning should be declared in Ireland and declare an early warning if necessary. • Advise Crisis Manager that an early warning has issued, and the rationale for the declaration if necessary. • Inform DCCAE as lead Government Department that an early warning has been declared in Ireland and the rationale for the declaration, if necessary. • Inform the EU Commission via the European Gas Co-ordination Group (GCG) that an early warning has been declared in Ireland and the rationale for the declaration, if necessary. • Provide updates to the European Gas Co-ordination Group (GCG) for the duration of the early warning. • Decide whether to remove, maintain or escalate early warning.
DCCAE	• Place National Co-ordination Group on stand-by or may decide to convene a meeting of the National Co-ordination Group.

[13] The obligations on NGUs and relevant market participants are detailed within the Code of Operations, and their respective licences. Consequently, the obligations contained within the Code of Operations and the relevant licences, take precedence over any information contained within this Emergency Plan.

	• Liaise with departments in Northern Ireland and GB.
Crisis Manager	• Advise GNI that CRU has declared an early warning. • Provide situation updates and requested information to the CRU. • Brief DCCAE and the European Gas Co-ordination Group (GCG) as appropriate. • Provide situation updates to GNI as appropriate.
GNI	• Advise NGU's that an early warning has been declared by the CRU. • Provide situation up-dates to the Crisis Manager. • Advise NGU's that early warning crisis declaration is revoked.
Shippers /Suppliers	• Notify registered industrial gas customers of early warning if appropriate.

Table 4: Roles and Responsibilities – Early Warning Level

3.2 Alert

Table 5 outlines the general roles and responsibilities of all parties involved at an alert crisis level.

Participant	Role & Responsibilities
CRU	• Determine whether an alert should be declared in Ireland and declare an alert if necessary. • Advise the Crisis Manager that an alert has issued and the rationale for the declaration if necessary. • Inform DCCAE as lead Government Department that an alert has been declared in Ireland and the rationale for the declaration if necessary.

	• Inform the EU Commission via the Gas Co-ordination Group (GCG) that an alert has been declared in Ireland and the rationale for the declaration if necessary. • Provide updates to the European Gas Co-ordination Group (GCG) and the Crisis Manager for the duration of the alert. • Decide whether to remove, maintain or escalate alert. • Approve the Crisis Manager's Action Plan. • Monitor the effectiveness and/or request amendments to the Action Plan. • Decide whether to remove, maintain or escalate an alert.
DCCAE	• Place National Co-ordination Group on stand-by or may decide to convene a meeting of the National Co-ordination Group (NCG) • Liaise with departments in Northern Ireland and GB, as required.
Crisis Manager	• Advise GNI that an Alert has been declared by the CRU. • Provide an Action Plan for CRU approval if required. • Implement Action Plan and monitor its effectiveness. • Provide situation reports to CRU if appropriate, and information to the CRU in accordance with the Regulation. • Brief DCCAE and the European Gas Co-ordination Group (GCG) as appropriate. • Provide situation updates to GNI as appropriate. • Produce a Closing Report for the CRU if required.
GNI	• Advise NGU's that an alert has been declared by the CRU. • Provide information to Crisis Manager as required. • Advise NGU's when alert declaration is revoked.

	• Provide updates to NGUs on alert.
NGEM	• Implement the NGEP and declare a Stage 1 Potential emergency. • Convene and chair the GERT. • Co-operate with the Crisis Manager in providing information and situation updates.
EirGrid	• Attend the GERT and provide information on electricity system to the NGEM. • Undertake voluntary load switching of gas-fired power stations as requested by the NGEM.
Shippers/ Suppliers	• Notify registered industrial gas customers of alert. • Implement market-based demand side measures, if any.
Holders of a Petroleum Lease	• Implement market-based measures, if possible.
Storage/LNG Operators	• Implement market-based measures, if possible.

Table 5: Roles and Responsibilities – Alert Level

3.3 Emergency

Table 6 outlines the general roles and responsibilities of all parties involved at an emergency crisis level.

Participant	Role & Responsibilities
CRU	• Determine whether an emergency should be declared in Ireland and declare an emergency if necessary. • Advise Crisis Manager and DCCAE that emergency has been declared. • Inform the EU Commission via the Gas Co-ordination Group (GCG) that an emergency has been declared in Ireland and provide updates until issue is resolved. • Attend GERT meeting(s). • Take appropriate action in the case of non-compliance with directions issued by the NGEM. • Decide whether to remove or maintain an emergency. • Prepare final report for the European Gas Co-ordination Group (GCG) if appropriate.
DCCAE	• Convene and chair NCG. • Liaise with departments in Northern Ireland and GB. • Participate in the GERT. • Inform Government Departments as appropriate. • Co-ordinate National Media response.
Crisis Manager	• Liaise with the NGEM and GNI. • Liaise with the EirGrid (the electricity TSO).

	• Brief the DCCAE, NCG and European Gas Co-ordination Group (GCG). • Provide technical input to the NCG press briefings. • Provide Situation Reports to CRU. • Produce a Closing Report for the CRU.
NGEM	• Declare NGEP Stage 2 Emergency. • Inform CRU in the case of non-compliance with directions issued by the NGEM. • Co-operate with the Crisis Manager in providing information and situation up-dates.
GNI	• Inform NGUs that an emergency has been declared. • Provide updates to NGUs on emergency. • Co-operate with Crisis Manager in developing situation reports. • Attend GERT meetings. • Provide regular updates to NGUs on emergency. • Load shed large gas customers as necessary. • Advise NGUs that emergency has been revoked.
EirGrid	• Attend the GERT and provide input on electricity system to the NGEM. • Undertakes load switching of gas-fired power stations as required by the NGEM. • Declares electricity emergency if required. • Load shed electricity customers as necessary to protect the integrity of the electricity system.

ESB Networks	• Manages the operations of the local electricity supply networks during a gas supply emergency under the direction of EirGrid. •
Shippers/Suppliers	• Notify registered industrial gas customers of emergency. • Comply with directions of NGEM.
Holders of a Petroleum lease	• Comply with directions of the NGEM.
Storage/LNG Operators	• Comply with directions of the NGEM.
Consumers	• Gas and electricity consumers respond to demand reduction requests from the NGEM and/or the electricity network operators.
Generators	• Respond to requests from EirGrid to reduce demand or switch fuel supplies.
Emergency Services	• Emergency Services/Local Authorities in Ireland manage the social consequences of the gas supply emergency.

Table 6: Roles and Responsibilities - Emergency Level

3.4 Reporting Obligations during an Alert and Emergency

3.4.1 NGUs' reporting obligations to Crisis Manager:

The Crisis Manager requires information from all Shippers/Producers/Storage Operators to enable the best utilisation of all facilities in the event of an alert or emergency, including:

- forecast deliveries at all entry points;
- maximum available deliveries at all entry points;
- maximum available indigenous gas production;
- forecast deliveries from storage services (if available); and
- maximum available deliveries from all storage services (if available).

It is the responsibility of the Shippers/Producers/Storage Operators to provide such information to the Crisis Manager on a regular basis when requested.

Additionally, GNI shall provide information on:

- available gas storage days (if present);
- available indigenous gas production;
- number of days line-pack available; and
- consumption of gas fired power stations at time of crisis declaration.

3.4.2 Crisis Manager's reporting obligations to CRU/Competent Authority:

In order to ensure compliance with Article 14(1) of the Regulation, the Crisis Manager shall provide, daily, the following information to the CRU during an emergency:

- daily gas demand and supply forecasts for the following 3 days;
- daily flow of gas at all cross-border entry and exit points as well as all points connecting a production facility, a storage facility (if present) or an LNG terminal (if present) to the network, in mcm/d; and
- the period, expressed in days, for which it is expected that gas supply to the protected customers can be ensured.

3.4.3 CRU/Competent Authority reporting obligations to EU Commission:

In the event of a Union or regional emergency, the CRU shall provide the following information, if requested, to the EU Commission:

- information requirements as set out in Article 14(1) of the Regulation;
- information on the measures planned to be undertaken and already implemented to mitigate the emergency, and information on their effectiveness;
- the requests made for additional measures to be taken by other Competent Authorities; and
- the measures implemented at the request of other Competent Authorities.

Additionally, following the end of an emergency in Ireland, the CRU shall, as soon as possible and at the latest 6 weeks after the lifting of the emergency, provide to the EU Commission a detailed assessment of the emergency and the effectiveness of the implemented measures, including an assessment of the

economic impact of the emergency, the impact on the electricity sector, and the assistance provided to, and/or received from the Union and its Member States. In order to complete such a report, the CRU will require input from EirGrid, GNI, the Crisis Manager and the NGEM.

4 Measures for undue consumption by non-protected customers

To prevent the undue consumption of gas by customers who are not protected customers the NGEP describes the role of Authorised Officers who are appointed to take any or all of the following actions to ensure compliance with the instructions of the NGEM in accordance with Statutory Instrument S.I. No. 336 of 2013.

The Authorised Officer may:

- At any time, enter land or premises in order to take any action necessary to ensure compliance with the instruction.
- Require any person on the land or premises to do all such things as are in his or her opinion necessary or expedient for the purpose of ensuring compliance with the instruction.
- Require the person in charge of the land or premises to give the Authorised Officer such assistance and facilities within the person's power or control as are reasonably necessary to enable the Authorised Officer to exercise any of his or her powers.
- Require the person in charge of the land or premises to give the Authorised Officer such information as may be reasonably required for the purpose of his or her powers.
- Require a person on the land or premises to follow any procedure for the purposes of any action necessary to ensure compliance with the instruction.

Any person who obstructs or impedes an Authorised Officer in the exercise of his or her duties commits an offence which may lead to fine or imprisonment. The CRU shall be informed in the event of the NGEM issuing an instruction to an Authorised Officer to carry out any of the actions listed above.

It may be necessary for the NGEM to seek government support to assist with the management of a Natural Gas Emergency; examples are described below:

- To compel organisations or individuals to carry out the directions of the NGEM given in accordance with the NGEP.
- To seek the support of other government departments and agencies, including the civil and military authorities, to assist with the management of the emergency.
- To interface with external governments and agencies; including the Northern Ireland Office, UK Government and the EU Gas Coordination Group, as

required.

Depending on the nature of the emergency it may be necessary to convene the Energy Press Officers Network (EPON), consisting of media and communication experts from the gas and electricity TSO's, CRU and DCCAE. The purpose of the EPON is to ensure the delivery of a consistent national media in the event of an emergency. Where an emergency is likely to impact electricity and gas supplies to protected customers the use of public appeals to reduce consumption will be coordinated centrally by the EPON. Traditional broadcast methods (e.g. TV, radio) and social media channels will be used to communicate the public appeals.

If the above support is required the NGEM make the request to the CRU (in writing where time permits) and will detail the support required indicating specific requirements and desired timescales for delivery. The CRU will liaise with the lead government department (DCCAE) and other government departments and/or agencies as necessary. Requests for support will be discussed at the GERT.

5 Emergency Tests

Emergency scenarios are unique and dynamic in nature depending on the scale and potential impact of the emergency and the real time response can vary depending on the nature of the emergency. Appendices 2 to 4 set out the steps and actors involved for a real time response with the significant mitigation measures for a gas deficit emergency being: (a) load shedding of gas-fired electricity generators and (b) a timeframe for secondary fuel switching that has been agreed between GNI and the electricity TSO EirGrid to take effect.

GNI's Natural Gas Emergency Plan (NGEP) is tested on an annual basis. The 2018 emergency exercise titled 'Exercise Aifric' was carried out in October 2018 and simulated a natural gas emergency arising from a progressively worsening gas supply scenario during a period of high demand coinciding with a severe weather event. The severe weather event resulted in record domestic gas demand in the Republic of Ireland. The supply deficit was based on restricted imports due to supply deficits in Great Britain. An integral part of the NGEP is load shedding of gas-fired power generation which was simulated in conjunction with the electricity TSO (EirGrid) in order to restore the gas supply / demand imbalance. This load shedding was facilitated by secondary fuel switching of gas-fired power generators and was managed by EirGrid.

Exercise Aifric successfully demonstrated that GNI and industry was able to respond to the scenario tested in accordance with the emergency arrangements described in the NGEP.

Learnings and recommendations from emergency tests are reviewed and incorporated where necessary into the revised plans. Some recent learnings and recommendations were:

- To incorporate a test of the Energy Press Officers Network (EPON) as part of an emergency test on a regular basis;
- To test back-up communication methods between the Gas Emergency Response Team (GERT) as part of an emergency test on a regular basis to ensure a failure in telecommunications could be managed; and
- For GNI to understand the electricity TSO's (EirGrid) demand side response arrangements for supporting the electricity network in the event of load shedding gas-fired power stations, i.e. to ensure this was not contrary to efforts to reduce gas demand.

Previous tests of the NGEP include:

- 2015 Exercise Neasa – gas deficit emergency

- 2016 Exercise Niamh – gas deficit emergency
- 2017 Gas Quality Emergency - odourant failure

GNI also participates in the annual emergency exercises of the Network Emergency Coordinator (NEC) in Great Britain.

6 Regional Dimension

The primary vehicle for regional co-operation on the Emergency Plan is through the UK and Ireland Gas Planning Emergency Group. This group comprises representatives from governments, regulators and TSOs of GB, Ireland and Northern Ireland. The group meets twice a year and has developed a regional approach to emergency planning to ensure that the natural gas emergency operational plans of all jurisdictions work together. This is achieved through the development of protocols between the TSOs and modifications to emergency plans identified following joint emergency exercises. These are fundamental to the management of an emergency at the three crisis levels described in the Regulation. Much of the work of this group has to date focussed on this aspect of regulatory co-operation.

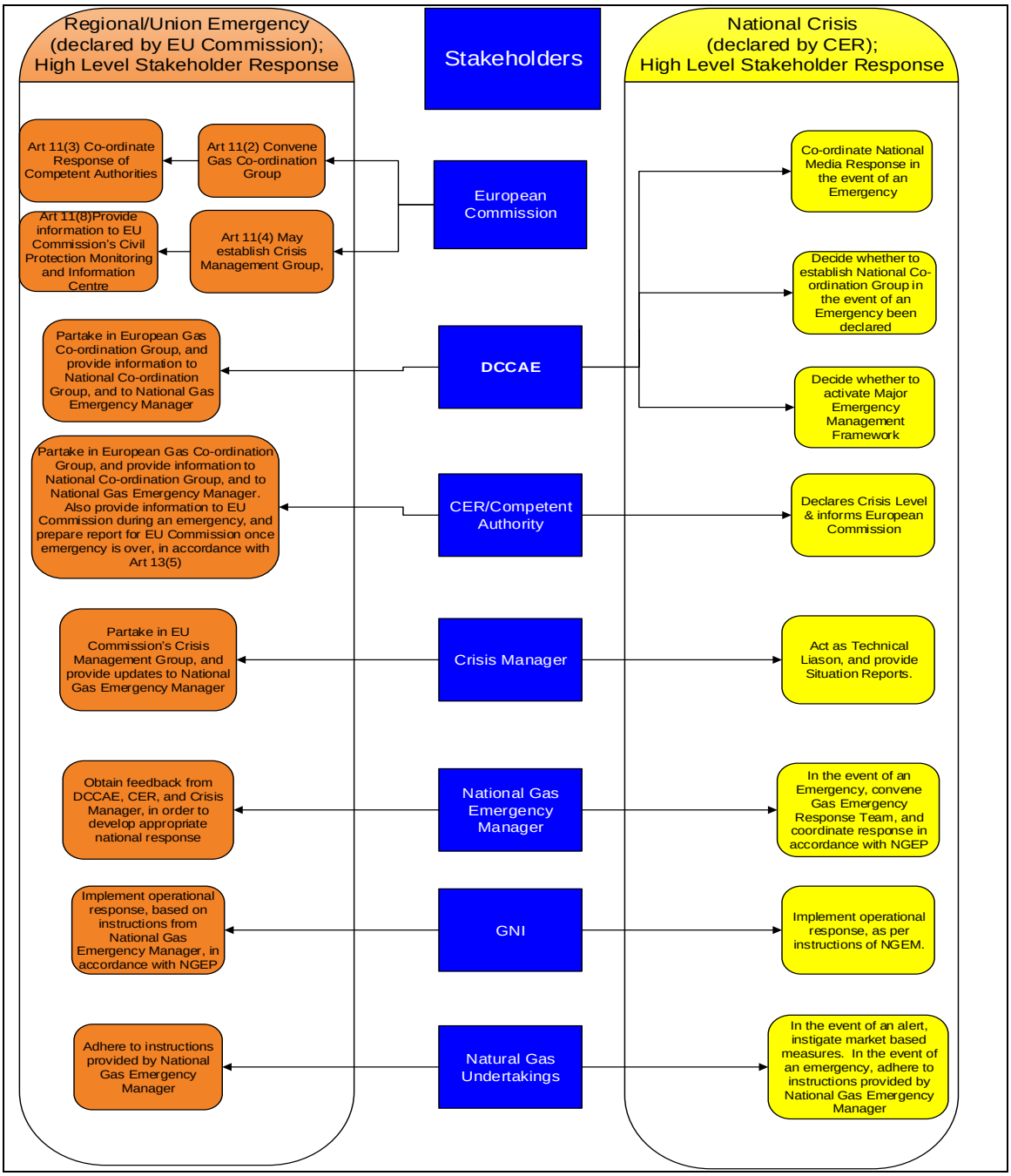
In addition, the group supports government and regulatory co-operation through the adoption and development of emergency planning procedures and communication protocols for emergency management. These measures have a primary role in the early warning and alert crisis levels and seek to ensure consistency of emergency response and preparedness.

Further information on the regional interactions per crisis level are set out in Sections 1.5.1, 1.5.2, and 1.5.3. Section 2.3 refers to the solidarity arrangements.

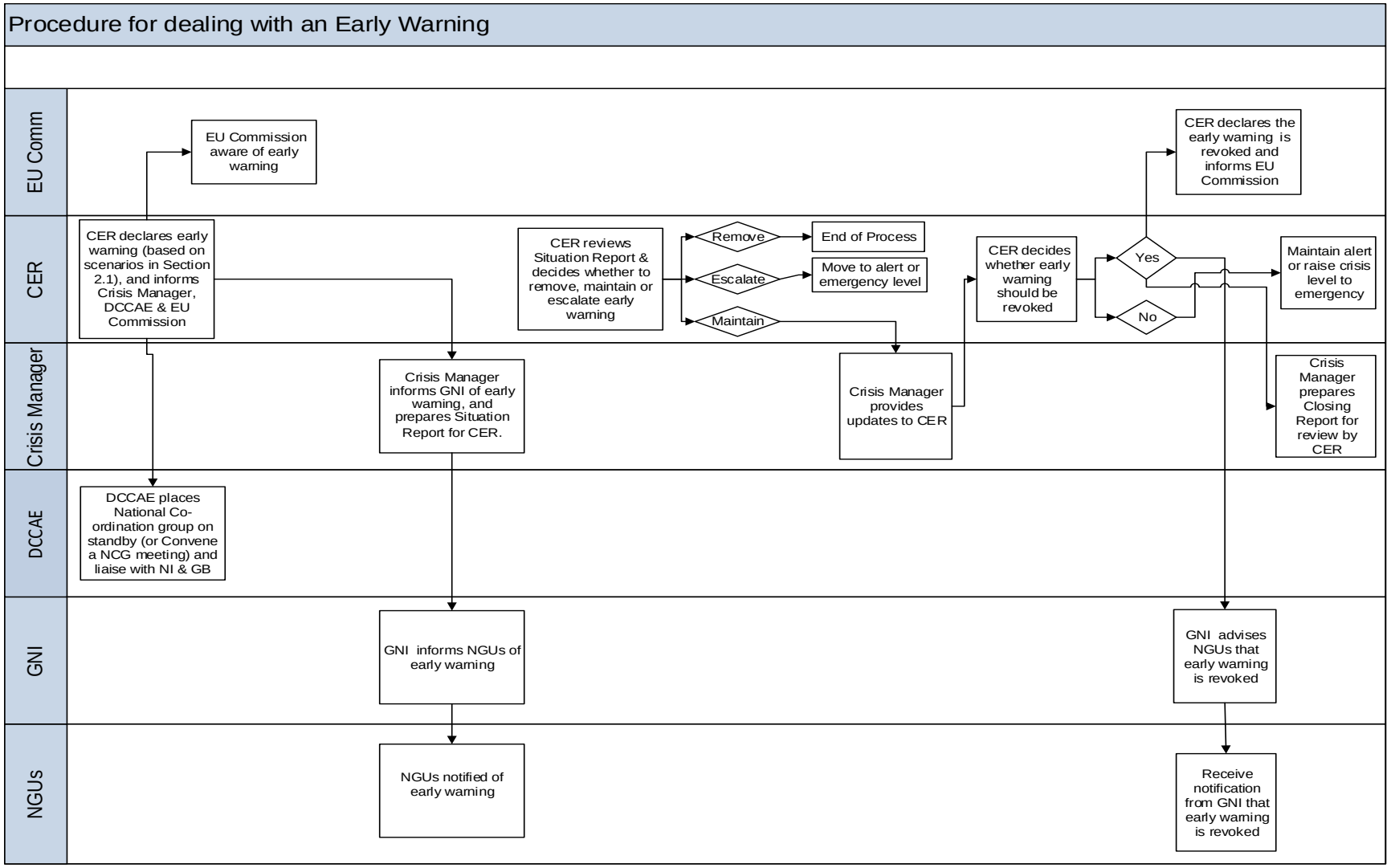
7 Conclusion

Ireland's Emergency Plan (2018-22) has been prepared in accordance with the Regulation. Given that the Emergency Plan will be required to be updated every 4 years, the CRU will continue to monitor market developments, and update the document to ensure consistency with the Regulation.

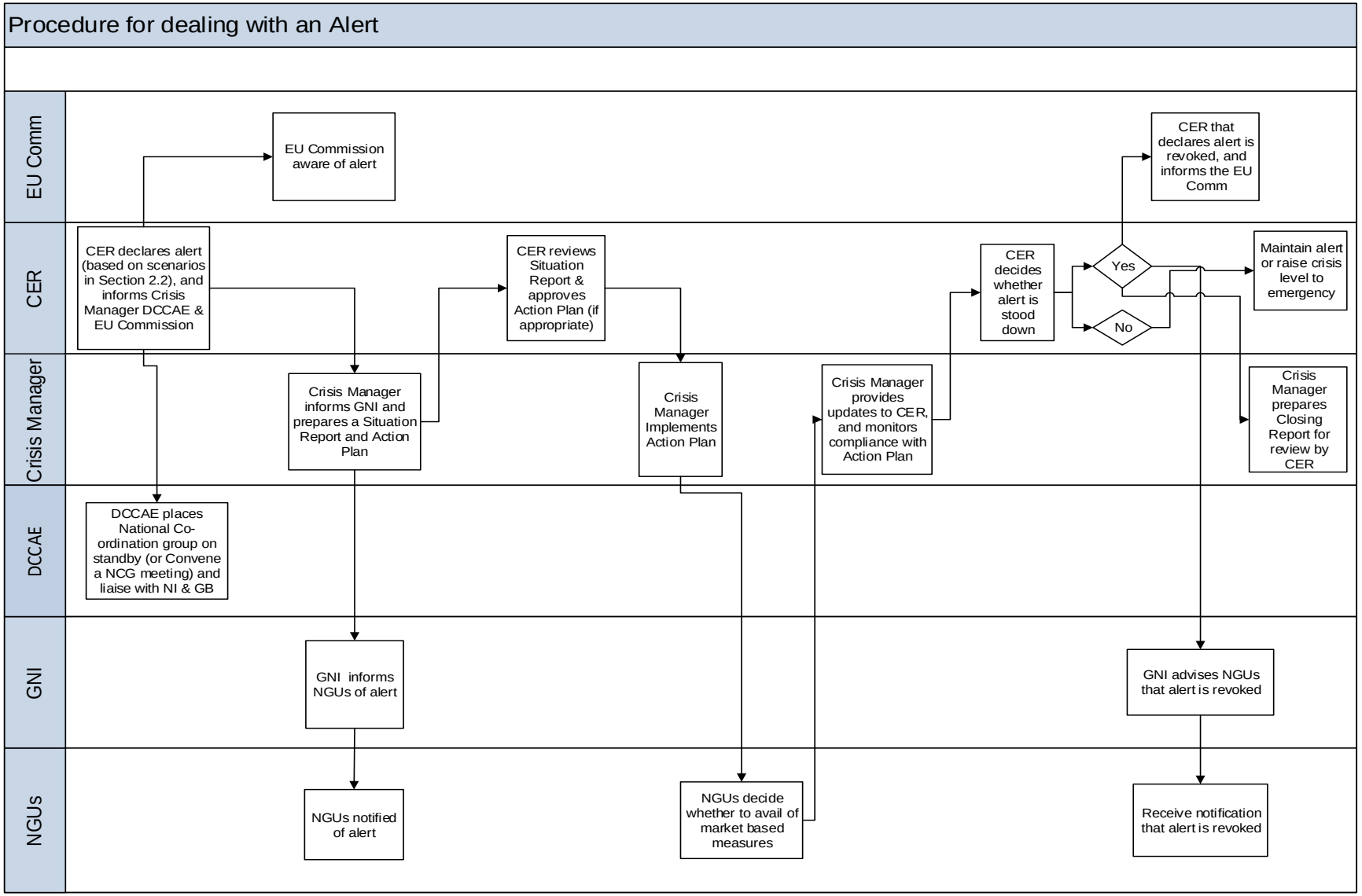
Appendix 1: High Level Overview of Roles & Responsibilities



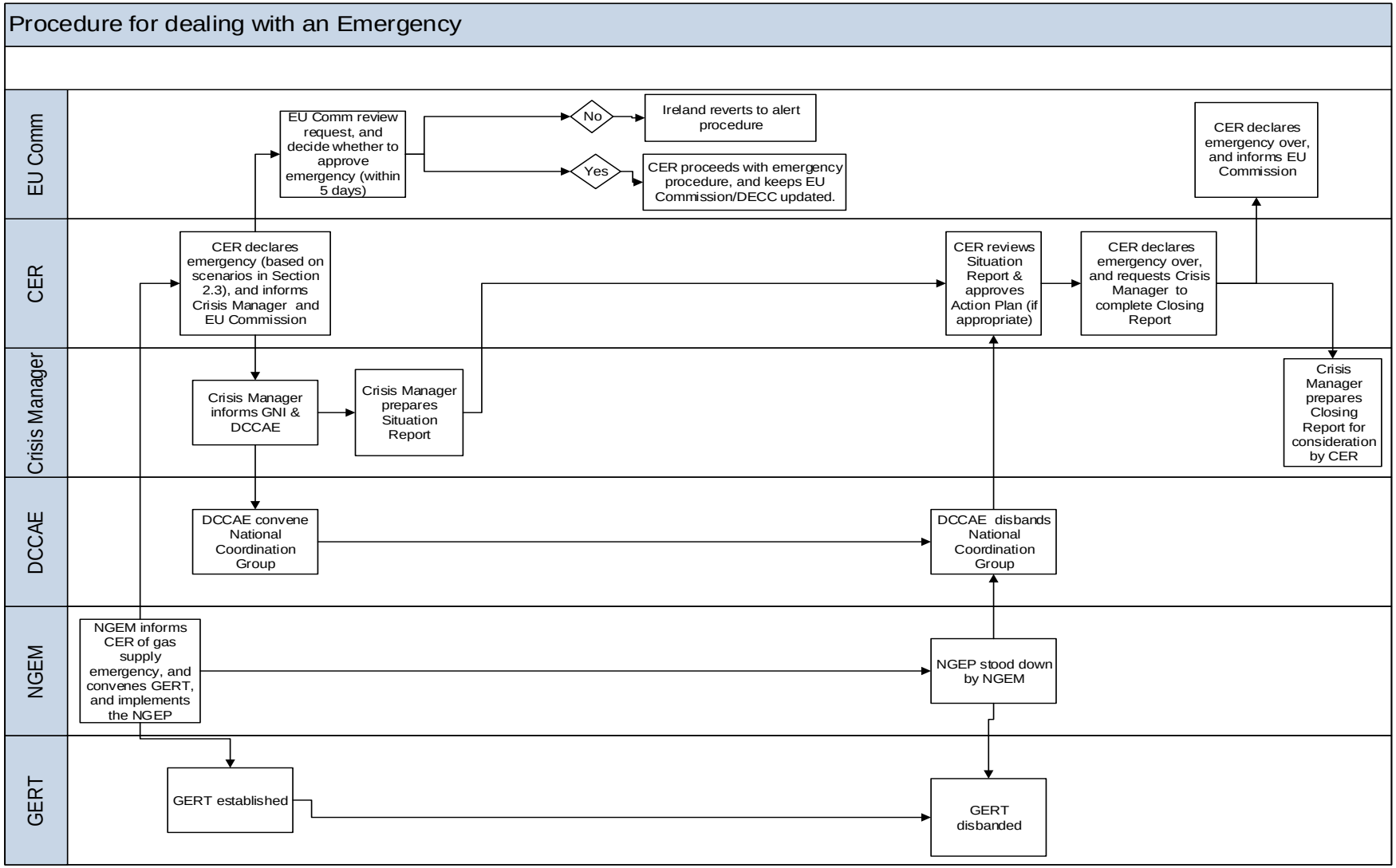
Appendix 2: Early Warning Flow Chart


Procedure for dealing with an Early Warning
EU Comm
CER
Crisis Manager
DCCAE
GNI
NGUs
EU Commission aware of early warning
CER declares early warning (based on scenarios in Section 2.1), and informs Crisis Manager, DCCAE & EU Commission
Crisis Manager informs GNI of early warning, and prepares Situation Report for CER.
DCCAE places National Co-ordination group on standby (or Convene a NCG meeting) and liaise with NI & GB
GNI informs NGUs of early warning
NGUs notified of early warning
CER reviews Situation Report & decides whether to remove, maintain or escalate early warning
Remove
Escalate
Maintain
End of Process
Move to alert or emergency level
Crisis Manager provides updates to CER
CER decides whether early warning should be revoked
Yes
No
CER declares the early warning is revoked and informs EU Commission
Maintain alert or raise crisis level to emergency
Crisis Manager prepares Closing Report for review by CER
GNI advises NGUs that early warning is revoked
Receive notification from GNI that early warning is revoked

Appendix 3: Alert Flow Chart


Procedure for dealing with an Alert
EU Comm
CER
Crisis Manager
DCCAE
GNI
NGUs
EU Commission aware of alert
CER that declares alert is revoked, and informs the EU Comm
CER declares alert (based on scenarios in Section 2.2), and informs Crisis Manager DCCAE & EU Commission
CER reviews Situation Report & approves Action Plan (if appropriate)
CER decides whether alert is stood down
Yes
No
Maintain alert or raise crisis level to emergency
Crisis Manager informs GNI and prepares a Situation Report and Action Plan
Crisis Manager Implements Action Plan
Crisis Manager provides updates to CER, and monitors compliance with Action Plan
Crisis Manager prepares Closing Report for review by CER
DCCAE places National Co-ordination group on standby (or Convene a NCG meeting) and liaise with NI & GB
GNI informs NGUs of alert
GNI advises NGUs that alert is revoked
NGUs notified of alert
NGUs decide whether to avail of market based measures
Receive notification that alert is revoked

Appendix 4: Emergency Flow Chart


Procedure for dealing with an Emergency
EU Comm
CER
Crisis Manager
DCCAE
NGEM
GERT
EU Comm review request, and decide whether to approve emergency (within 5 days)
No
Ireland reverts to alert procedure
Yes
CER proceeds with emergency procedure, and keeps EU Commission/DECC updated.
CER declares emergency over, and informs EU Commission
CER declares emergency (based on scenarios in Section 2.3), and informs Crisis Manager and EU Commission
CER reviews Situation Report & approves Action Plan (if appropriate)
CER declares emergency over, and requests Crisis Manager to complete Closing Report
Crisis Manager informs GNI & DCCAE
Crisis Manager prepares Situation Report
Crisis Manager prepares Closing Report for consideration by CER
DCCAE convene National Coordination Group
DCCAE disbands National Coordination Group
NGEM informs CER of gas supply emergency, and convenes GERT, and implements the NGEP
NGEP stood down by NGEM
GERT established
GERT disbanded