



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

Gas Safety Regulatory Framework for Ireland – High Level Approach

DOCUMENT TYPE:	Decision paper
REFERENCE:	CER/14/296
DATE PUBLISHED:	7th July 2014
VERSION:	2.0

*The Commission for Energy Regulation,
The Exchange,
Belgard Square North,
Tallaght,
Dublin 24.
www.cer.ie*

The Electricity Regulation Act, 1999 gives the Commission for Energy Regulation (“the CER”) specific functions in the area of safety regulation of the Natural gas industry. Further legislative amendments in recent years have provided the CER regulatory responsibility with respect to the safety of aspects of the Liquefied Petroleum Gas (LPG) industry.

In order to fulfil its regulatory responsibilities, the CER initially published a Natural Gas Safety Regulatory Framework document in 2007 (Ref: CER/07/172). The document has now been updated to reflect the legislative remit which the CER has with respect to the LPG industry.

The revised Framework is now known as the “**Gas Safety Regulatory Framework**” and incorporates the safety regulatory regime for both natural gas and LPG.

The CER also consulted on the regulation of the Kinsale gas facility in June 2014. The decisions made following that consultation are now reflected in the Gas Safety Regulatory Framework.

The CER intends to commence a public consultation on the Gas Safety Regulatory Framework in its entirety in late 2014.

Executive Summary

The CER, under legislation introduced in 2010 and 2012, now has responsibility to regulate LPG undertakings with respect to safety. This is in conjunction with its existing safety responsibilities regarding natural gas undertakings.

In order to undertake this function, the CER has integrated the regulation of LPG undertakings into the existing regulatory system, which operates under the Natural Gas Safety Regulatory Framework. The Framework structure is a collection of regulations, written regulatory documents and processes which the CER uses to regulate the activities and infrastructure of natural gas undertakings in Ireland. The relevant sections of the *Energy (Miscellaneous Provisions) Act 2012* giving the CER powers to regulate LPG were commenced on January 24th 2013 by the current Minister for Communications, Energy and Natural Resources.

This decision document follows the publication of a number of papers on changes to the existing regulatory Framework. These include a Discussion Paper (Ref: CER/12/106) on the functioning of the Framework, and the proposed integration of LPG into the Framework. A Consultation on this Framework Document (Ref: CER/13/029) was also published in March 2013, and a Consultation Response and Next Steps Paper (Ref: CER/13/127). Further to these publications, specific LPG related consultations were carried out in Q3 and Q4 of 2013, and Q1 of 2014. The aim of these consultations was to establish a licencing regime for LPG undertakings operating domestic piped distribution networks by April 2014. The CER also consulted on the regulation of the Kinsale gas fields in Q2 2014. The revised Framework is now known as the “Gas Safety Regulatory Framework” and incorporates the safety regulatory regime for both natural gas and LPG.

The CER is now publishing this Gas Safety Regulatory Framework decision document which incorporates the regulation of the LPG industry and a recent decision on a change in the regulation of Kinsale gas fields.

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Document Control

Date	Version/Paper Type	Update By	Comment
2007	High-Level Approach Decision Paper	Eamonn Murtagh	Original Framework Document: CER07172
28.01 .13	Consultation Paper	Suzanne Wyse	Published as a consultation paper as part of the Gas Safety Framework Revision: CER13029
07.07 .14	Version 2.0	Suzanne Wyse	Updated to reflect implementation of LPG licensing regime and change to regulation of Kinsale

1.0 Overview

1.1 *Introduction and Background*

The *Electricity Regulation Act, 1999* (“the 1999 Act”), as amended by the *Energy (Miscellaneous Provisions) Act, 2006* (“the 2006 Act”), gives the Commission for Energy Regulation (“the CER”) specific functions in the area of safety regulation of the natural gas industry. The 2006 Act requires the CER to discharge this responsibility through the implementation and ongoing operation of a Natural Gas Safety Regulatory Framework (“the Framework”). The CER may amend or review the Framework as often as is considered necessary, but there is a requirement that the Framework would at least include:

- A system for the inspection and testing of all natural gas transmission and distribution pipelines, storage and liquefied natural gas (LNG) facilities to an extent and at a frequency specified in the Framework;
- A system for the regulation, certification, ongoing inspection of work and investigation of complaints regarding the competence of any particular natural gas installer;
- Procedures for the investigation of any incidents involving natural gas which, in the opinion of the CER, warrant investigation and for the making of a report to the Minister in respect of the investigation.

In 2007, the CER published a Decision Paper entitled “*A Natural Gas Safety Regulatory Framework for Ireland – Decision Paper*”. This paper set out the CER’s high level approach for the safety regulation of the Irish natural gas sector based on the requirements of the 2006 Act. As part of the Framework design, a number of detailed documents were produced along with the decision paper, such as Safety Case Guidelines for Natural Gas Undertakings and a Gas Safety Promotion and Public Awareness Strategy document. These documents outlined in detail how the various parts of the Framework would operate.

The next step in the development of the CER's safety regulation responsibilities was the inclusion of safety regulation of certain aspects of the LPG industry in the CER's suite of statutory functions. This was done in two phases over the period 2010 – 2012. The first phase was implemented under the *Energy (Biofuel Obligations and Miscellaneous provisions) Act, 2010* ("the 2010 Act"), which incorporated LPG installers into the Registered Gas Installer ("RGI") registration scheme from June 2011.

The second phase of LPG regulatory functions granted the CER increased enforcement powers over all natural gas and LPG undertakings, and licensing powers over certain LPG undertakings; specifically operators of piped LPG distribution systems. This was enacted in 2012, through the *Energy (Miscellaneous Provisions) Act, 2012* ("the 2012 Act"), and was commenced in January 2013. The revised Framework is now known as the "Gas Safety Regulatory Framework" and incorporates the safety regulatory regime for both natural gas and LPG.

The 2012 Act defines an LPG undertaking as,

"any person who imports LPG or purchases LPG directly from a refinery within the State and makes LPG available to individual domestic or commercial final customers by way of LPG cylinder, bulk tank or via a piped LPG distribution network".

The 2012 Act also defines a piped LPG distribution network as,

"a pipeline system connected to a central storage bulk tank or LPG cylinder but not including a bulk tank or LPG cylinder as the case may be, and includes pipework above and below ground and all other equipment necessary upstream of the point of delivery and downstream of the emergency control valve, supplying gas to two or more customers."

As such, the CER's new licensing powers under the 2012 Act only extend to LPG undertakings operating piped LPG distribution networks to multiple domestic final customers, however its functions with regard to incident investigations, promotion and public awareness and certain enforcement powers extends to all LPG undertakings as defined.

The Natural Gas Framework has been in operation for six years and can best be understood as the system that the CER uses to regulate natural gas undertakings with regard to safety. The 2012 Act required the CER to establish and implement a safety regulatory framework for both natural gas and LPG. As a result the CER has expanded the existing regulatory Framework to include the regulation of LPG. The revised Framework is now known as the "Gas Safety Regulatory Framework".

In order to achieve this, the CER has published a number of consultation and decision documents throughout 2013 and 2014, including:

- Gas Safety Regulatory Framework Review Discussion Paper (Ref: CER/12/106),
- Gas Safety Regulatory Framework – Consultation Paper (Ref: CER/13/029),
- Gas Safety Regulatory Framework – Consultation Response and Next Steps Paper (Ref: CER/13/127),
- Safety Case Guidelines for LPG Undertakings – Decision Paper (Ref: CER/13/253),
- Proposed LPG Safety Licence and Licence Application Fees – Consultation Paper (Ref: CER/14/044),
- Proposed Levy Methodology for Licensed LPG Undertakings – Consultation Paper (Ref: CER/13/045).

The CER is now publishing this Gas Safety Regulatory Framework document which incorporates the regulation of the LPG industry and a change to the regulation of the Kinsale gas facility.

1.2 Structure of Paper

This decision paper is an updated version of the *2007 Natural Gas Safety Regulatory Framework Document* (Ref: CER 07/172), which has been adapted to include LPG and an update to the regulation of the Kinsale gas facility. It specifically sets out:

- the legislative landscape in which the natural gas and LPG safety regulatory framework resides (Section 2);
- the scope of the Framework (Section 3);
- the natural gas and LPG markets which operate within the scope of the Framework (Section 4);
- the key safety risks which must be managed within the Framework (Section 5); and
- the Framework and its operation (Section 6).

2.0 Legislative Landscape

The 1999 Act is the principal piece of legislation in the context of the CER's gas safety responsibilities. The 1999 Act was amended by the 2006 Act, conferring the regulation of safety in the natural gas industry on the CER, and again by the 2010 and 2012 Acts, which gave the CER responsibility for safety regulation in the LPG industry. The 2012 Act also includes greater enforcement powers with respect to both natural gas and LPG undertakings, and licensing and levying powers with regard to certain LPG undertakings. There are also a number of other Acts and Regulations that relate to gas safety which are pertinent to the CER's safety role; these are described briefly in the following sections.

2.1 ***The Energy (Miscellaneous Provisions) Act, 2006***

The *Energy (Miscellaneous Provisions) Act 2006* amends the *Electricity Regulation Act 1999* to give the CER its responsibility for safety regulation of Natural Gas undertakings, including the establishment of the Framework, promotion and public awareness, regulation of gas installers and the establishment of the post of Gas Safety Officer.

2.2 ***The Energy (Biofuel and Miscellaneous Provisions) Act, 2010***

The *Energy (Biofuel and Miscellaneous Provisions) Act 2010* also amends the 1999 Act to add LPG installers to the regulatory regime for gas installers. This was commenced in June 2011 by SI 280 of 2011.

2.3 ***The Energy (Miscellaneous Provisions) Act, 2012***

The *Energy (Miscellaneous Provisions) Act 2012* further amends the 1999 Act to give the CER its responsibility for the regulation of certain areas of the LPG industry with respect to safety. The 2012 Act gives the CER the power to license LPG undertakings operating piped distribution networks to multiple domestic customers and regulate the activities of LPG undertakings with respect to safety. It also gives the CER increased enforcement powers over both natural gas and LPG undertakings.

2.4 Other Relevant “CER Specific” Legislation

There are a number of other specific pieces of legislation which give the CER certain powers which underpin the establishment and implementation of the Framework, as described below.

2.4.1 Gas (Interim) Regulations Act 2002 and Associated Regulations

As stated earlier, the CER assumed its responsibilities and functions for the regulation of the onshore natural gas market under the *Gas (Interim) (Regulation) Act, 2002*. The Act provides that the CER may grant to any person the licence required to carry out the supply or shipping of natural gas or the operation of a transmission system, a distribution system, a LNG facility or a natural gas storage facility. Regulations arising from this Act set down criteria on the basis of which the CER must determine an application for a consent of licence, and how a licence holder must operate and maintain its facility. The 2002 Act also gives the CER enforcement powers in terms of licence and consent holders

2.4.2 Gas (Amendment) Act (1987)

The CER has the power under the *Gas (Amendment) Act 1987* (the ‘1987 Act’) to confer certain gas transmission and distribution functions, and ancillary functions on individuals in its employ. The *Gas (Amendment) Act 1987 (Section 2) Order*

1987 (as amended) and the subsequent *Gas (Amendment) Act 2003 (Section 2) Order 2003*, made pursuant to the 1987 Act confers functions on Bord Gáis Networks relating to gas distribution in certain specified areas. It also makes Bord Gáis Networks subject to certain obligations, and confers Bord Gáis Networks with certain powers, in relation to safety.

In particular Article 17 of the 1987 Order provides that where an incident occurs involving the transmission or distribution of gas pursuant to the order (whether the incident occurs inside or outside a building) and the incident causes, either directly or indirectly -

- (a) the death of any person, or
- (b) injury to any person which requires medical attention to be given to such person in hospital other than as an out-patient, or
- (c) loss or damage to any building, land or other property, where in the opinion of the Board, aggregate value of such loss or damage is in excess of €6,348.69.

2.5 Other Relevant Legislation

There are also considerable amounts of other legislation in Ireland which impact upon gas and LPG safety that are relevant, including:

- The *Safety, Health and Welfare at Work Act, 2005* and regulations made under that Act;
- The *Planning and Development Act 2000*;
- *Dangerous Substances (Storage of Liquefied Petroleum Gas) Regulations 1990*; and
- The *National Standards Authority of Ireland Act, 1996*.

With respect to storage and LNG undertakings, the *EC Seveso II directive (96/082/EEC)*; and the *European Communities (Control of Major Accidents involving Dangerous Substances) Regulations 2000 (S.I. 476 of 2000)* as amended are also relevant.

3.0 Scope of the Gas Safety Regulatory Framework

The 1999 Act as amended by the 2006 Act, defines the scope of the CER's gas safety responsibilities and, by extension, the Natural Gas Safety Regulatory Framework.

Initially, the CER's responsibility was to regulate natural gas undertakings and natural gas installers with respect to safety. This function expanded under the 2010 and 2012 Acts, to include regulation of LPG undertakings and LPG installers with respect to safety. Given the complexity of the legislative landscape, and for the avoidance of doubt, it is appropriate to specifically set out:

- the current scope parameters of the updated Framework; and
- the elements which are not currently included within the scope.

For clarity, the phrase “the Framework” refers to this, the current version of the updated Gas Safety Regulatory Framework document. The 2007 Natural Gas Safety Regulatory Framework document will be referred to as “the original Framework” where appropriate.

3.1 *Scope Parameters*

The scope of the CER's responsibilities to regulate **the activities of natural gas undertakings, natural gas installers, LPG undertakings and LPG installers** with respect to safety and **to promote the safety of natural gas and LPG customers, and the public generally**, as respects the **supply, storage, transmission, distribution and use of natural gas and of appropriate LPG undertakings, as defined below**, warrants further clarification and definition.

Responsibility to Regulate

The words “*regulate the activities of natural gas and LPG undertakings*” are important. The CER does not have primary responsibility for the safe transmission, distribution, supply or storage of natural gas or LPG - this is the responsibility of undertakings themselves. The CER has the responsibility to ensure that undertakings carry out their activities in a manner which manages their safety risks to an appropriate level.

Definition of Natural Gas Undertaking

A natural gas undertaking is defined¹ as:

“a person engaged in the transmission, distribution, supply or storage of natural gas, including any holder of a licence or a consent under this Act, or any person who has been granted a licence or given a consent under the Gas Acts, 1976 to 2002”,

At present this category comprises any persons who has been granted a consent to construct a downstream gas pipeline or who is licensed under the Gas Acts to carry on any of the activities set out below:

- (i) the supply of natural gas,
- (ii) the shipping of natural gas,
- (iii) the operation of a transmission system,
- (iv) the ownership of a transmission system,
- (v) the operation of a distribution system,
- (vi) the ownership of a distribution system,
- (v) the operation of an LNG facility,
- (vi) the operation of a natural gas storage facility.

Thus, in the case of natural gas undertakings, the CER’s responsibilities to regulate with respect to safety pertain to the activities of the above licensed consented entities only.

¹ In Section 2 of the 1999 Act

Definition of a LPG undertaking

A LPG undertaking is defined as:

“any person who imports LPG or purchases LPG directly from a refinery within the State and makes LPG available to individual domestic or commercial final customers by way of LPG cylinder, bulk tank or via a piped distribution network”,

This comprises any person or corporate body who carries out either of the following activities:

(a) **Import LPG and make** LPG available to individual domestic or commercial final customers by way of LPG cylinder, bulk tank or via a piped LPG distribution network;

(b) **Purchase** LPG directly from a refinery within the State **and make** LPG available to individual domestic or commercial final customers by way of LPG cylinder, bulk tank or via a piped LPG distribution network.

The 2012 Act then goes on to distinguish between a **LPG undertaking** (as defined above) and a **licensed LPG undertaking**. The CER can only license those LPG undertakings that are making LPG available by way of a piped LPG distribution network for use by multiple domestic final customers. The 2012 Act defines a piped LPG distribution network as:

“a pipeline system connected to a central storage bulk tank or LPG cylinder but not including a bulk tank or LPG cylinder as the case may be, and includes pipework above and below ground and all other equipment necessary upstream of the point of delivery and downstream of the emergency control valve, supplying gas to two or more customers”

The CER has a responsibility to regulate both natural gas undertakings and LPG undertakings with respect to safety but, as stated above, it can only licence those LPG undertakings that are making LPG available via a piped distribution network to multiple domestic final customers.

Definition of Natural Gas Installers

The term natural gas installer is not specifically defined in the Act. However, the provisions of Section 13 of the 2006 Act² make it clear that a person acts as a natural gas installer if he or she carries out works which are related to the installation, removal, repair or replacement of a natural gas fitting as defined and which the CER by regulation designated as gas works.

Definition of a LPG Installer

The 2010 Biofuels Act does not specifically define a LPG installer. However, Section 23 of the 2010 Act states that “gas installer”, as referred to in the 1999 Act, is redefined as “*LPG installer or natural gas installer as the case may be*”. It goes on to define an LPG fitting, and following this, makes the same provisions as those made for a natural gas installer as outlined above i.e. a person acts as a gas installer (referring to both natural gas and LPG) if he or she carries out works which are related to the installation, removal, repair or replacement of a natural gas or LPG fitting as defined and which the CER designates as gas works.

Responsibility to Promote

The CER considers that its function to promote the safety of natural gas and LPG customers and the public generally as respects the supply, storage, transmission, distribution and use of both natural gas and LPG was not intended to replicate the functions and powers of the Health and Safety Authority to promote, encourage and foster occupational safety (i.e. the prevention of accidents, dangerous occurrences and personal injury at work).

² See new Section 9G inserted in the 1999 Act.

The CER interprets its safety promotion functions to relate more generally to the impact of the natural gas value chain (i.e. LNG, storage, transmission, distribution and supply) and natural gas usage on the safety of natural gas customers and the general public. A similar interpretation is given to LPG, with the CER's functions defined by the 2012 Act as relating to the promotion of safety of LPG customers and the public generally as respects the supply and use of LPG.

3.2 Other Relevant Scope Parameters

The demarcation or boundaries of the individual natural gas undertakings are defined in Section 4.1 of this document.

3.3 What is Not in the Scope

The Framework is solely concerned with the regulation of safety of the natural gas and LPG industries. It does not include regulation of petroleum undertakings³ or petroleum activities such as petroleum exploration or production. Regulation of petroleum undertakings takes place under the Petroleum Safety Framework, which became operational in December 2013, and therefore will not be considered as part of this Framework.

With respect to LPG, the Framework does not include the safety regulation of those areas that are already regulated by the HSA or by Local Authorities. This includes:

- Bulk storage subject to Seveso regulations;
- Sea terminals, re-distribution terminals, distribution depots;
- Bulk contract and distributed networks to individual LPG tanks;
- Retail of LPG cylinders and bottles via dealer and stockists.

³ A Petroleum Undertaking is defined under the Petroleum (Exploration and Extraction) Safety Act 2010 as "Any person to whom a petroleum authorisation has been given or granted".

4.0 The Evolving Irish Gas Market

4.1 *The Natural Gas Market*

Prior to the introduction of competition, the vertically integrated Bord Gáis Éireann (BGÉ), as the sole gas asset owner and operator in the Irish market, was responsible for all aspects of safety with regard to natural gas pipelines and supply on-shore in Ireland. However, the introduction of competition to the gas sector resulted in new market participants having opportunities to become involved in both ownership and operation of gas assets as well as the supply of gas to final customers. Market liberalisation and the increase in the number of gas market participants introduced additional requirements for the effective management of safety risks due to the fragmented nature of the industry. As a consequence, the original Framework was introduced to create a standardised approach to regulation by the CER. Currently the structure of the Irish natural gas market is as follows;

- Gas Storage;
- A single gas transporter (Transmission and Distribution);
- Suppliers and Shippers;
- Several “shipper only” organisations that ship gas to a single premises only and not final customers;
- Gas installers; and
- Final customers.

These are described in more detail in the following sections.

4.1.1 *Gas Producers and Gas Storage*

PSE Kinsale Energy Ltd. (“PSE”) is currently the only offshore gas production company supplying commercial quantities of gas into Ireland. The Kinsale Head

Gas Field is the largest of the reservoirs; the others are known as Ballycotton Gas Field, Southwest Kinsale Gas Field and Seven Heads.

The four fields all lie between 25-35 miles off the south coast of Cork. There are two fixed steel production platforms, Alpha and Bravo in Kinsale Head Field. Gas is compressed and piped from the Alpha platform to the gas receiving station near Middleton, Co Cork. At the gas receiving station, the gas is metered and transferred to the BGÉ transmission system.

The boundaries of the PSE offshore facility are:

- the subsea pipelines that connect the subsea wells to the two production platforms;
- the 2 no. production platforms;
- the subsea pipeline that connects the Alpha production platform to the onshore receiving station at Middleton, Co. Cork; and
- the 'slug- catcher' facility at the receiving station, which is a shared facility with BGÉ.

The downstream boundary of PSE's offshore production facility is the connecting pipework and valve between the PSE and BGÉ transmission assets at the receiving station.

Ireland's only licensed natural gas storage facility is the PSE owned and operated offshore facility at southwest Kinsale. The southwest Kinsale reservoir is used as the gas storage facility and the gas production facilities have been modified to permit the injection and withdrawal of gas.

It should be noted that the Kinsale gas storage facility has been designed, constructed and is currently operated as an offshore gas production installation. The term "storage facility" includes the pipe that is used to transfer gas from the

platforms to the shore, along with storage that is taking place underground. There are shared facilities between the gas production platforms and the gas storage facility that make it difficult to delineate the exact boundaries of the safety management systems between the two facilities. Regulation of the Kinsale storage and production facility is currently carried out under both the Gas Safety Framework and the Petroleum Safety Framework, as responsibility for regulation of storage comes under the Gas Safety Framework and responsibility for production lies with the Petroleum Safety Framework. Given the combined nature of the Kinsale production and storage activities and in order to avoid unnecessary duplication of efforts by both parties, the CER outlined its approach to regulating the Kinsale Gas Facility in the decision paper “*Decision on the Regulation of Kinsale Gas Facility*” (Ref: CER/14/295), whereby the regulation of the Kinsale storage activity would be carried out in the following manner:

- PSE Kinsale Energy will be required to submit a single safety case to the CER covering both storage and production in accordance with the Petroleum Safety Case Guidelines,
- This safety case will be regulated by the CER under both the petroleum and gas safety regimes, and
- Once PSE Kinsale Energy production safety permit is in place their existing storage safety case will cease to be in effect.

At present the only other gas producer in Ireland is the Corrib field, which is expected to commence delivery during 2014. Corrib is regulated under the Petroleum Safety Framework regime.

4.1.2 *Gas Transporters*

The 2002 Act allows any party to apply for a licence to operate a transmission or distribution pipeline. Parties other than BGÉ may also apply for consent to construct new transmission or distribution assets. Currently, the only licensed

gas transporter in Ireland is Gaslink, who have an operating agreement with Bord Gáis Networks to undertake both transmission and distribution of gas.

From a safety perspective, it is critical that all gas transporters maintain, as a minimum requirement, the same level of gas safety and integrity that is currently being achieved in Ireland. Both transmission pipelines and distribution networks are subject to well established codes and standards, which require that gas infrastructure assets be designed, constructed, operated and maintained in a manner that provides high levels of safety and reliability and maintains the current low levels of risk to individuals and society. Any new entrant transporters would be required to comply with existing codes and standards for the operation of transmission and distribution systems.

The upstream boundary of the **transmission system** is the 'system entry points' at the following locations:

- In Southwest Scotland at the interface with the UK safety jurisdiction approximately 2kms from the UK mainland at Brighthouse Bay;
- At the emergency shutdown valve (ESV) on the spur supplying the Isle of Man;
- At the interface of the PSE Kinsale Energy Ltd/ BGÉ assets at the gas receiving station near Midleton in Co Cork;
- At the border between RoI and NI with respect to the North-South Pipeline; and
- At the outlet valve of the Bellanaboy gas processing terminal.

The downstream boundary of the transmission system is the station outlet isolation valve(s) of the pressure reducing installations supplying gas into the distribution system.

The upstream boundary of the **distribution system** is the transmission station outlet isolation valve(s) of the pressure reducing installations supplying gas into the distribution system. The downstream boundary is the outlet of the primary meter supplying the customers' premises, or, where BGE owns and operates the pipework and meters supplying secondary meters, the downstream boundary is the outlet of the secondary meter(s).

4.1.3 *Gas Suppliers and Shippers*

Currently within Ireland, there are a number of supply and shipper businesses supplying gas to residential customers and a number of supply and shipper businesses supplying gas to non-residential customers. Additionally, there are a number of licensed supply and shippers businesses who ship and supply gas to their own premises, mostly power stations and manufacturing or processing plants, and do not compete to supply final customers.

Gas shippers enter into a Framework Agreement with the gas transporter for the transport of gas through the pipeline network and in doing so they accept the terms of the 'Code of Operations' comprising the market rules for the transportation of gas within the Irish natural gas system. The risks inherent in shipper activities are addressed by ensuring that gas of appropriate *quality* is input into the transmission system and in the correct *quantity* to ensure that supply matches demand on a daily basis. In general, these risks are controlled by compliance with the Code of Operations and the gas system management and control activities of Bord Gáis Networks.

Gas suppliers have a direct contractual relationship with end customers for the supply of gas. As the gas supplier is the main interface with the customer, the gas supplier needs to address a wide range of potential safety-related customer risks that have the potential to result in a gas safety related incident occurring.

These are primarily concerned with the issuing of gas safety advice to customers and communicating with customers on safety-related matters.

4.1.4 *Gas Installers*

Prior to the 2006 Act, there was no specific legislative provision in place to require all fittings, installations and maintenance work on gas appliances to be conducted by a certified and competent installer. The 2006 Act required that CER establish a body to compile and publish a register of gas installers who possess the requisite skills, qualifications and experience for safe and proper installation, commissioning, testing, repair, removal, replacement and maintenance of gas fittings. To this end, the Register of Gas Installers was established and has been in place since 2007. In 2011, the Registration Scheme was expanded to include LPG installers. Registration is now mandatory for any gas installer wishing to carry out natural gas or LPG works in a domestic setting.

4.1.5 *Gas Customers*

There are approximately 650,000 gas customers in Ireland, with approximately 630,000 domestic residential customers and approximately 20,000 commercial/industrial customers. Since 2007, gas customers are free to choose their preferred gas supplier.

4.2 ***The LPG Market***

The LPG market in Ireland consists of a number of undertakings who supply LPG both in cylinders and storage tanks. The vast majority of the LPG supply chain in Ireland is addressed through existing legislation and regulatory oversight from the perspective of safety, by the Health and Safety Authority (HSA). However a number of key safety “gaps” were identified to be addressed; these are outlined below:

- The safety regulation of LPG piped distribution networks to multiple domestic final customers;
- Incident reporting and investigation; and
- The promotion of LPG safety.

Under common arrangements, LPG is supplied to domestic customers via LPG tank(s), LPG cylinder(s) or underground LPG distribution networks supplied from a central LPG tank(s). The configuration of the LPG supply normally depends on whether individual groups or groups (multiples) customers are being supplied. Each of these various supply arrangements and the safety issues that need to be addressed are described in Sections 4.2.1 to Section 4.2.4.

4.2.1 Supply via Above-Ground LPG Storage Tank(s)

This type of supply usually consists of a single tank connected by a pipeline to an individual premises. Under this arrangement the LPG Supplier installs and refills the LPG storage tank and retains ownership of the tank. The pipework connecting the LPG storage tank to the property is normally buried below ground and this pipework is the property of the customer and not the LPG Supplier. Therefore, the customer has responsibility to ensure this buried pipework is maintained and that it is fit for purpose to convey LPG.

4.2.2 Supply via Above-Ground LPG Cylinders

This system is an alternative to bulk LPG storage tanks. Individual domestic customers are supplied via LPG cylinders connected together through a pipework manifold arrangement. The LPG cylinders are refilled and owned by the LPG Supplier. In this circumstance, there may not be an external, buried installation pipe connecting the LPG cylinders to the customer's property as the cylinders tend to be sited close to the property. The pipework manifold connecting the LPG

cylinders together with the downstream (of the Electronic Control Valve (ECV) pipe, fittings and appliances are the property of the customer and must be properly maintained by the customer. The enforcement of safety arrangements with respect to the LPG cylinders is the responsibility of the HSA under the “*Dangerous Substances (Storage of LPG) Regulations 1990*”.

4.2.3 *Supply via Underground LPG Distribution Networks*

Another alternative LPG supply arrangement is a situation whereby two or more customers are connected to an underground distribution network of mains and service pipes that distribute LPG fuel to individual properties from a central LPG storage tank(s) that may be buried or mounted at a location suitably remote from the properties. In this configuration, the LPG supplier owns the LPG tank(s), the pressure regulating equipment, the underground network of mains and service pipes and the primary meters at each property and is therefore responsible for the maintenance of these assets. The customer owns the pipework, fittings and appliances that are downstream of the primary meter outlet and is therefore responsible for ensuring that this downstream installation pipework is maintained.

The installation pipework downstream of the meter has been included in the scope of LPG Gas Works and only Registered Gas Installers (RGI's) are authorised to undertake such work. Under the 2012 Act, the CER is responsible for the safety regulation of the piped distribution network. The HSA has responsibility for the bulk storage vessel.

4.2.4 *Supply of LPG to Non-Domestic Premises*

In this configuration, the LPG supplier retains ownership of the LPG tank and is responsible for the tank's maintenance. All pipework downstream of the ECV, fittings and appliances are the property of the customer (or employer). They are responsible under safety, health and welfare workplace legislation for its proper

maintenance. While the CER intends to consult on the proposal to include commercial gas works in the Registered Gas Installer regulatory scheme, it should be noted that there are currently no intentions to include industrial customers in the definition of “Gas Works” as this customer segment tends to use highly specialised gas burning processes and the Health and Safety Authority already has an enforcement role in this area.

4.2.5 *Summary of the CER’s Safety Responsibilities with respect to LPG*

The CER do not have a remit to regulate, nor does it intend to regulate, those areas that the HSA are already responsible for. The CER’s responsibilities in the areas described above are as follows:

- Educating domestic customers on the need to engage competent registered LPG installers for all “LPG Gas Works” **and** informing customers of the risks and dangers associated with LPG leaks from older, external buried installation pipework that may be corroded or generally not fit for purpose;
- Carry out promotion and public awareness activities in conjunction with natural gas and LPG undertakings;
- Implementing a regime for the reporting and investigation of incidents related to LPG installations and appliances in domestic properties, under the criteria outlined in the 2012 Act and Section 6.3 of this paper;
- Development and implementation of a regulatory framework to ensure proper design, construction, testing, commissioning, operation and maintenance (including emergency response arrangements) of LPG piped distribution network infrastructure. This will be implemented through the licensing regime for LPG undertakings operating piped distribution networks for domestic supply; and
- The appointment of Gas Safety Officers by the CER with rights of entry and the ability to act or direct with respect to “LPG fittings”.

5.0 Safety Risks Associated with Storage, Transportation and Supply of Natural Gas and LPG

Natural Gas

As safety regulator, the CER must ensure that the Framework is appropriate to protect the public from the safety risks that arise from the activities of the various natural gas undertakings and to provide assurance that those undertakings are managing their safety risks to a level that is as low as reasonably practicable (ALARP). Broadly, there are five principal aspects of gas safety risk that need to be managed and controlled:

- 1) The hazards associated with natural gas as a fuel;
- 2) The design, construction, operation and maintenance, modification and decommissioning – i.e. the asset lifecycle safety risks – and safe management of all gas infrastructure assets;
- 3) The control of gas quality, pressure and flow within the network and the safe delivery of gas at the supply point;
- 4) The response to (i) ‘localised’ gas emergencies affecting relatively small numbers of customers; (ii) ‘network’ gas emergencies affecting potentially much larger numbers of customers; and (iii) emergencies at specific major hazard installation sites that require an ‘on-site’ and an ‘off-site’ emergency response.
- 5) Ensuring the safe utilisation of gas downstream of the meter, within all gas facilities and premises (domestic and non-domestic).

LPG

The CER must also ensure that the Framework is appropriate to protect the public from the safety risks that arise from the activities of the various LPG undertakings and to provide assurance that those undertakings are managing their safety risks to a level that is as low as reasonably practicable (ALARP). The CER proposes adopting a similar approach to the regulation of safety in the LPG industry as in the natural gas industry. Many of the principle aspects of gas safety risks that apply to natural gas are also applicable to the LPG industry. As in natural gas, there are technical standards for gas quality and pressure for tanks and bottles in installation and filling. Although there is no specific country-wide LPG emergency response system, each undertaking operates localised LPG emergency response services. Broadly, the CER intends to address the same safety risks for LPG as outlined for natural gas above.

5.1 Hazards of Natural Gas and LPG as Fuels

Natural Gas

Natural gas is predominantly methane gas with small quantities of various higher hydrocarbon gases and some inert gases including nitrogen and carbon dioxide. When natural gas and air are mixed in certain proportions, the resulting mixture can be flammable and sometimes explosive. Natural gas has no smell and requires the addition of an odorant to allow unburned gas to be more readily detectable. When burned safely in air, the products of combustion are carbon dioxide and water vapour, which are non-toxic. However, if the supply of air is inadequate or the gas burning appliance is faulty or improperly maintained, the combustion process will be incomplete and **carbon monoxide** will be produced. Carbon monoxide is colourless, odourless and highly toxic. There have been a number of serious incidents with respect to carbon monoxide poisonings in the

recent past and this issue has been subject to a high profile public safety awareness campaign.

LPG

Liquefied Petroleum Gas (LPG) is the generic term for hydrocarbon fuel gases with the primary active constituents being propane and butane. These constituents are derived from petroleum and can be readily converted to liquid form by the application of moderate pressure and/or refrigeration. LPG is normally supplied in the form of commercial propane. The compressibility of LPG makes it particularly suitable for bulk storage and transportation, however due to its ability to expand greatly; it must be stored in a suitable pressure vessel. Vaporised LPG at atmospheric pressure is approximately one-and-a-half to two times heavier than air. Therefore escapes of LPG tend to flow along the ground or the floor and to accumulate at low points such as pits, sumps, drains, or basements. As with natural gas, burning LPG can produce **carbon monoxide** if the supply of air is inadequate or if an appliance is faulty or improperly maintained as the combustion process is incomplete in these circumstances. As previously stated, carbon monoxide is colourless, odourless and highly toxic.

5.2 Asset Lifecycle Safety

There are inherent safety risks associated with the 'asset lifecycle' that need to be managed by those responsible for the design, construction, operation, maintenance, modification and decommissioning of both gas and LPG infrastructure assets. These asset lifecycle risks apply to LNG terminals, gas storage facilities, transmission systems and distribution networks alike and the key safety emphasis is on avoiding situations that lead to the loss of containment of the gas that is being processed, stored or transported throughout the working life of the asset. Primarily, loss of containment risks are characterised by:

- Large scale loss of containment from LNG and storage facilities that may have an adverse effect on site workers and the local population;
- Loss of containment (both large or small scale) from LPG storage tanks or transport vehicles that can impact on site workers and the local population;
- High pressure release of gas from transmission pipelines caused by unplanned events such as third party damage, geotechnical changes or material defects or degradations e.g. weld or corrosion defects; and
- Lower pressure release of gas from distribution networks caused by third party damage, fracture of cast iron pipe, joint leakage and corrosion of unprotected steel pipes.

The design, construction, operation, maintenance and modification of these gas infrastructure assets are subject to well established technical codes and standards that provide for high levels of safety and reliability and a low level of risk to society.

5.3 Gas Quality and Operating Pressure

Natural Gas

Natural gas that is transported through the system and supplied to gas burning appliances must conform with prescribed gas quality characteristics in terms of its *quality* and operating *pressure*. There are a range of gas quality parameters that must be controlled but the most safety-critical parameter of gas quality is the Wobbe Index, which represents the 'heating value' of the gas and must be within the prescribed range to ensure that gas can be burned safely in appliances. Additionally, gas conveyed through the system and supplied to gas burning

appliances must be within a defined range of pressure to ensure safe transportation and utilisation. The Code of Operations for natural gas (Part G 1. Specifications: Gas Quality and Pressure) contains provisions on the quality and pressure of gas that is injected into the system and all new supply and shipper undertakings will be required to comply with the existing Code of Operations.

LPG

LPG cylinders and tanks have a similar range of gas quality parameters that must be controlled when bottles and tanks are being refilled. Undertakings must ensure that gas of the correct quality is being supplied, and that standards are being adhered to when filling is taking place.

5.4 Gas Emergency Response

Natural Gas

Gas emergencies may be 'localised' in which case, there may be a relatively small-scale loss of containment that results in the loss of gas supply to a single customer or a group of customers within a relatively small geographic area. These gas emergencies are effectively managed through Gaslink and Bord Gáis Networks, as part of the emergency response service and generally do not require the participation of other gas undertakings.

However, in the event of a large-scale 'network' gas emergency, which may involve:

- a significant loss of gas supply, resulting in a reduction in the safe operating pressure of the system; or
- a gas quality emergency whereby gas of non-conforming quality is injected into system,

gas supplies to a large number of customers over a wide geographic area may be adversely affected. It is important that the emergency response actions of all market participants are coordinated to ensure that the emergency situation can be avoided or brought under control and gas supplies restored quickly and safely. These emergency response actions are primarily associated with customer gas load curtailment and the re-profiling of gas injections into, and withdrawals from, the transmission system by shippers. The Natural Gas Emergency Plan (NGEP) has been developed by Gaslink (and approved by CER) to provide for a coordinated response by market participants in the event of such a gas emergency being declared by the National Gas Emergency Manager (NGEM).

In accordance with Regulation (EU) 994/2010, the CER has also published a National Gas Supply Emergency Plan (CER/12/208), which provides a framework for the interaction between Gaslink's operational emergency plan and the European measures concerning the security of gas supply and emergency management, as provided for under Regulation EU 994/2010. As part of its ongoing compliance with Regulation (EU) 994 2010, the CER will be submitting an updated National Gas Supply Emergency Plan to the EU Commission in December 2014, in conjunction with a Regional Emergency Plan for the UK and Ireland.

The response to gas emergency incidents at major hazard installations will be managed by the Facility Operator and in accordance with the Operator's 'On-Site Major Emergency Plan'. Emergency incidents at these facilities can sometimes have adverse off-site impacts with respect to: (i) the local population; and (ii) the downstream transmission and distribution systems. In the case of potential adverse effects on the local population, these are managed by the local emergency authorities via an 'Off-Site Major Emergency Plan', whereas potential adverse impacts in the downstream transmission and distribution systems are managed by the NGEM as described above.

LPG

As LPG is not supplied through a single, interconnected, widespread distribution network, the emergency response requirements for LPG undertakings are not the same as those for natural gas undertakings. No “network wide” response is in place, as LPG emergencies are likely to be mainly localised loss of supply, through loss of containment, leaks, etc. LPG undertakings operate an emergency response service to respond to individual emergencies, in conjunction with local emergency services. There is no requirement for involvement by other market participants. There is still potential for a major incident, however localised, and LPG undertakings are expected to have a robust and co-ordinated response process in place for leaks, loss of containment and any other hazards that may occur.

5.5 Safe Utilisation of Gas

There are three broad safety risks associated with the utilisation of both gas and LPG:

- the competency of gas and LPG installers;
- the use of approved gas and LPG fittings and appliances; and
- the levels of gas safety awareness amongst end-use customers and the general public.

Gas and LPG installers must be competent, assessed as such, and registered to undertake installation and maintenance activities on fittings and appliances. The potential outcomes of improper gas and LPG installation and maintenance include:

- gas leaks inside the property resulting in fire and/or explosion; and
- inadequate ventilation and/or incomplete combustion resulting in the potential for carbon monoxide poisoning.

Gas and LPG customers, and the public at large, should have a level of gas safety awareness necessary to ensure that they understand the potential dangers of not employing registered and approved gas and LPG installers and not servicing gas-burning appliances regularly. The raising of gas customer safety and public awareness levels has, so far, been an important requirement of the Framework. Natural gas undertakings have engaged fully with this process along with some LPG undertakings, who have voluntarily participated. Under the 2012 Act, all LPG undertakings can now be required by the CER to participate in customer safety and public awareness activities, along with Natural Gas Undertakings.

6.0 The Gas Safety Regulatory Framework

When developing the original Framework in 2007, the CER considered the requirements set out in the 2006 Act, the CER's powers as licensing authority, the experience of gas safety regulation in other liberalised gas markets, the evolving nature of the Irish gas market and finally the nature of the gas safety risks that must be managed. In revising the Framework to include LPG, the CER also considered these requirements along with new requirements as set out by the 2010 and 2012 Acts.

With this in mind, the structure of the Framework is based on: (i) a number of key guiding principles; (ii) an approach posited on risk, outcomes and securing compliance; and (iii) achieving a number of key strategic and regulatory safety objectives.

6.1 *Principles, Approach and Objectives*

The key guiding *principles* underpinning the Framework are:

- 1) the Framework should achieve safety outcomes for the natural gas and LPG industries, natural gas and LPG customers and the general public in Ireland that are, as a minimum, commensurate with the high level of natural gas and LPG safety currently being achieved in Ireland and best safety practice within other jurisdictions internationally;
- 2) the degree of regulatory control should be at an appropriate level needed to establish effective and comprehensive control of risk and maintain the confidence of the public at large;

- 3) the regulation of natural gas and licensed LPG undertakings with respect to safety will be enforced through licence conditions rather than through prescriptive Regulations;
- 4) the ultimate responsibility for natural gas and LPG safety rests with those who create and have control over the risks – i.e. the gas and LPG undertakings;
- 5) in discharging its natural gas and LPG safety functions, the CER will consult and interact with expert bodies who have certain responsibilities relating to gas and LPG safety; and
- 6) the effectiveness of the Framework will be subject to continuous review and improvement based on measurement of the safety outcomes and overall safety performance of the Framework.

The ***approach*** of the CER to natural gas and now, to LPG safety regulation is one where the Framework allows undertakings to manage their gas safety risks to a level that is ‘as low as reasonably practicable’ (ALARP) with an appropriate level of regulatory intervention necessary to **secure compliance** with the Framework **and achieve the desired safety outcomes**. This is described in further detail in section 6.2 of this paper.

The overall ***strategic objective*** of the Framework is:

To ensure that adequate measures are taken to protect life and property from the dangers associated with natural gas and LPG by ensuring that gas and LPG related activities within the scope of the CER’s responsibilities are carried out in a safe manner, which takes account of and mitigates against the risks associated with the

storage, transportation, supply and use of natural gas and LPG, as applicable.

The CER as safety regulator will ensure that the Framework addresses the safety risks that arise from the activities of the various undertakings. The regulatory objectives of the Framework are developed to ensure that the identified safety risks are reduced to a level that is as low as reasonably practicable (ALARP) and that natural gas and LPG undertakings have suitable safety management systems in place for managing those risks.

The key ***regulatory objectives*** of the Framework are:

Key Objective 1: Minimising the Risk of Loss of Containment

Gas undertakings will be required to demonstrate that they have suitable management systems and procedures in place for managing the risks that lead to, and arise from, loss of gas containment events.

Key Objective 2: Maintaining Safe System Operating Pressure

Gas undertakings will be required to demonstrate that they have suitable management systems in place for managing the risks that can result in dangerously high or low gas operating pressure in the pipeline system(s).

Key Objective 3: Minimising the Risk of Injecting Gas of Non-Conforming Quality

Gas emergency incidents can arise due to gas of inappropriate quality being injected into the system and, as such, gas undertakings will be required to demonstrate that they have suitable management systems in

place for gas quality monitoring and managing the risks associated with the quality of gas that is injected into the system.

Key Objective 4: Providing an Efficient and Coordinated Response to Gas Emergencies

Gas emergency events can and do occur for a variety of reasons including the actions of third parties. For example, Bord Gáis Networks will be required to demonstrate that it has suitable arrangements in place for: (i) managing the response to ‘localised’ gas emergencies; and (ii) undertaking the role of National Gas Emergency Manager (NGEM) during ‘network’ gas emergencies. Additionally, all natural gas undertakings will be required to demonstrate that they have suitable arrangements in place for responding to the requirements of the NGEM in the event of large-scale ‘network’ gas emergencies being declared by the NGEM.

As stated in section 5.4 above, the operators of major accident hazard facilities such as LNG terminals and gas storage facilities have responsibility for the on-site management of gas emergencies within the confines of their installations. The role of the NGEM in such circumstances is to manage the downstream impacts of such emergencies within the transmission and distribution networks.

LPG undertakings will also be required to demonstrate a coordinated response to emergencies. It must be noted that LPG emergencies tend to be site specific, and can often heavily involve local emergency services; notwithstanding this, undertakings must also outline their individual emergency coordination and response strategies.

Key Objective 5: Minimising the Safety Risks Associated with the Utilisation of Gas

The Framework provides for a comprehensive regime relating to the regulation of gas installers. The key aim of this regime is that all categories of 'gas works' designated by the CER are only undertaken by competent gas installers who are registered, and subject to ongoing regulation and inspection, by the Gas Safety Supervisory Body appointed by the CER. The connection and re-connection of customers' installations to the gas supply network and the servicing of such installations is an important safety risk issue that will be addressed within the scope of this objective. Customer education and safety awareness is an important part of this gas safety objective as discussed in key objective 6.

Key Objective 6: Promoting Public Awareness of Gas Safety

Increasing the level of gas safety awareness amongst gas customers and the public generally and, in particular, educating on the dangers of carbon monoxide is an important aspect of the CER's overall objective of promoting the safety of customers and the general public in respect the use of gas. It is also important that owners/occupiers are aware of their responsibilities in respect to the maintenance of pipework and gas fittings downstream of the tank and/or meter. To this end, the Framework places duties and obligations on both individual gas undertakings and the industry generally for the promotion of gas safety awareness. This involves a combination of both individual and co-ordinated safety promotional activities by undertakings.

In order to measure the extent to which the objectives of the Framework are being achieved, the CER has developed a suite of **key safety performance indicators (KPIs)** for each key objective, which it will monitor on an ongoing basis.

With this in mind, the main components of the Framework comprise:

- a) A **Gas Safety Case** regime, which uses a risk and outcomes based approach to the management of gas safety risks to a level that is as low as reasonably practicable, for each licensed undertaking, The regime will apply to both natural gas and licenced LPG undertakings;
- b) A **Gas Safety Supervisory Body** responsible for the registration of gas installers that meet specified criteria of training and competency, and subsequently regulate gas installers via an ongoing inspection and audit regime of work against specified standards. This scheme is in existence since 2009; it is known as the Register of Gas Installers of Ireland (RGII). The scheme was expanded to include LPG installers in 2011;
- c) A **Gas Safety Promotion and Public Awareness** regime that is designed to increase the overall level of natural gas and LPG safety awareness amongst customers and the general public on gas safety matters based on coordinated and individual undertaking's safety promotional activity;
- d) An **Incident Reporting and Investigation** regime that fulfils obligations for the reporting and investigation of incidents by Bord Gáis Networks, the reporting on the outcomes of incident investigations by Bord Gáis Networks to the CER and subsequent reports by the CER to the Minister. This will also include for incident reporting and investigation requirements by the operators of major accident hazard facilities – e.g. LNG and gas storage operators. LPG undertakings will report incidents using the same

classification system as BGN under Regulations made under the 2012 Act, as outlined in Section 6.4 ;

- e) An **Audit and Inspections** regime that the CER will use to gain assurance that the various natural gas and licenced LPG undertakings are operating in compliance with the gas safety management and emergency response arrangements as described in their respective safety cases, and the Gas Safety Supervisory Body in accordance with its Terms and Conditions of Appointment; and
- f) A **Gas Safety Reporting Framework** that utilises a suite of gas safety performance indicators to monitor trends and provide assurance that the intended outcomes of the Framework are being achieved.

6.2 Gas Safety Case Regime

The CER has implemented a safety case regime for natural gas that is risk and outcomes-based, flexible in the approach to the management of 'lifecycle gas safety' and not driven by prescriptive regulation. A similar regime is being implemented for licensed LPG undertakings; a *Safety Case Guidelines Document* (Ref: CER/13/253) has been published to give such LPG undertakings guidance as to what is required in a safety case. Although the safety related responsibilities and activities for different gas undertakings will vary according to the nature of the business, the differing safety information requirements will be accommodated within a generic safety case structure.

Section 3 of this document sets out the undertakings who are subject to the Framework regulatory regime. Under this regime, undertakings are required to submit a safety case to the CER for each licence that they hold or apply for.

The regime currently requires safety cases that comprise the following key sections:

- A **'Facility Description'** that describes the nature, activities, location, organisation structure, safety related responsibilities and assets employed in carrying out the day-to-day business of the natural gas or LPG undertakings. The Facility Description must provide sufficient information to enable the extent and scope of the assets and operations of the gas undertaking in relation to the facility, and the risks associated with those assets and operations, to be assessed.
- A **'Formal Safety Risk Assessment'** that is consistent with the activities described in the Facility Description and is based on a detailed and systematic assessment of risk, including the likelihood and consequence of a gas safety related incident occurring and a description of the mitigation measures adopted to ensure that identified risks are maintained at a level that is as low as reasonably practicable (ALARP). The risk assessment process should take into account the safety risks inherent at each of the stages of design, construction, operation and maintenance, modification and decommissioning of natural gas or LPG (where appropriate) infrastructure assets. It is not the intention of the CER to be prescriptive on the approach to risk management as many businesses will already operate within the context of recognised risk management frameworks. However, an important requirement of the Formal Safety Risk assessment is that identified safety risks are mitigated to a level that is regarded by the gas undertaking to be as low as reasonably practicable (ALARP). The CER, in its role as safety regulator and as part of the safety case assessment process, will form a judgement as to whether the safety risk mitigating measures implemented by the undertaking reduce the safety risk to a level that is ALARP.

- The '**Safety Management System**' that the undertaking employs to effectively manage the safety risks as identified in the Formal Safety Risk Assessment. This includes the safety policy, organisation, planning, implementing, audit and performance monitoring and reviewing systems used by the undertaking to manage their business-specific safety risks to a level that is ALARP. A specific requirement of the 2006 Act is that the frequency and extent of the inspection and testing of undertakings' pipelines should be specified. The CER, therefore, requires that undertakings, based on their assessment of risk(s), specify the frequency and extent of pipeline inspection and testing in their safety case and submit this to the CER for assessment and, where deemed, adequate, acceptance or approval by the CER. The Safety Management System should also address the human factors (i.e. competencies and capabilities of staff) that are important in managing and controlling the safety hazards and risks that are identified in the Formal Safety Risk Assessment.
- The '**Emergency Procedures**' that provide details of the emergency response arrangements that natural gas undertakings in particular, have in place in order to provide an effective and coordinated response to gas emergency situations. The National Gas Emergency Manager (NGEM) Framework is the critically important feature of the various Natural Gas undertakings' Emergency Procedures, and it is those Emergency Procedures which should describe in detail how resources and staff, with the necessary skills and competencies, are arranged to provide a coordinated response to the requests and instructions of Bord Gáis Networks acting as the NGEM in the event of a gas emergency being declared. The Emergency Procedures are not intended to describe the arrangements for dealing with 'localised' gas emergencies that affect one-off or relatively small groups of customers and are managed by Bord Gáis Networks on a day-to-day basis as the emergency service provider. The arrangements for managing these localised gas emergencies should be

described in the Bord Gáis Networks Safety Management System as part of a corrective maintenance regime.

For the operators of major accident hazard facilities, this will involve the submission of major emergency plans as described previously in Section 5.4.

Incidents involving LPG tend to be site-specific, as there is no single-widespread LPG network as such. Local emergency services are usually heavily involved in LPG emergencies. However LPG undertakings will have to demonstrate that there is a coordinated emergency response plan in place to deal with any emergencies that may arise, and that suitably trained and competent personnel are available.

The emphasis of the Safety Case regime is on '**demonstration**' by the gas undertaking that acceptable safety arrangements for the management of gas-safety related risks are in place and working effectively on a day-to-day basis. In this context, demonstration involves a higher standard than simply describing the way measures work or are expected to work. There is a requirement on the undertaking to provide evidence that the measures described in the safety case work in practice and are monitored to ensure that this actually happens. The 'demonstration' requirement is explained clearly in the Safety Case Guidelines Documents for natural gas (Ref: CER/07/226) and LPG (Ref: CER/13/253).

6.3 ALARP

A key regulatory goal of the Framework is to ensure that gas undertakings fulfil the obligation of managing risks to a level that is ALARP. As previously described, ALARP stands for "as Low as Reasonably Practicable". The original

Framework took the approach of requiring a demonstration from natural gas undertakings that they were meeting this requirement through the Safety Case regime. The CER did not define what constituted a sufficient demonstration of ALARP in its Safety Case Guidelines. This system has functioned well, however under the Petroleum Safety Framework; further guidance on the concept of ALARP has been developed. An *ALARP Guidance document* (Ref: CER/13/073)) has been published, by the Petroleum Safety Framework team and provides detailed guidelines to undertakings of the CER's expectations on what will constitute a sufficient ALARP demonstration under the Framework..

The CER has decided that for clarity and consistency, the requirements of the Gas Safety Regulatory regime will align with the guidance principles described in this document. A similar guidance document will be drafted for the natural gas and LPG regulatory framework. This will be published for consultation in 2014.

6.4 *Incident Reporting and Investigation Regime*

As previously described in Section 5.4, Bord Gáis Networks is currently required to investigate natural gas related incidents and report to the CER on the outcomes of the investigation. The incident types are set out in Article 17 of the 1987 Gas (Amendment) Act (Section 2) Order. The three categories of incident are as defined below:

- Type A – where the death of any person occurs either as direct or indirect result of a gas incident;
- Type B – where injury to any person requires medical attention to be given to such person in hospital other than as an out-patient;
- Type C – where loss or damage to any building, land or other property, where in the opinion of Bord Gáis Networks the aggregate value of such loss or damage is in excess of €6,348.69.

The above definitions of incidents form part of the Safety Reporting Regime as described later in Section 6.9. The CER may require that other gas-related incidents, which are not defined as Types A, B or C, be subject to investigation and reporting. These are known as “Reportable under Guidelines” incidents and the CER and BGN have agreed a series of Guidelines around these incidents.

The Incident Reporting and Investigation regime will serve to facilitate learning on the causes of gas incidents, assist in developing recommendations to prevent recurrences and, overall, improve the performance of the Framework.

Under the 2012 Act, LPG undertakings must also report gas-related incidents. The three categories of incident are similar to those applied to Bord Gáis Networks, and are as follows:

- The death of any person;
- Injury to any person which requires medical attention to be given to such person in hospital other than as an out-patient, or
- Loss or damage to any building, land or other property, where in the opinion of the LPG undertaking concerned, the aggregate value of such loss or damage is in excess of €6,500,

resulting from the use, misuse, abuse, leakage, combustion or explosion of LPG.

The CER have defined these categories as Types A, B and C, similar to the categories described for Bord Gáis Networks. They have been set out in the following incident reporting regulations:

- Liquefied Petroleum Gas Safety (Liquefied Petroleum Gas Incident) Regulations 2014 (Statutory Instrument (SI) No: 77); and,
- Liquefied Petroleum Gas Safety (Liquefied Petroleum Gas Incident Reporting and Investigation) Regulations 2014 (SI No: 78).

The definition of incidents as they relate to major hazard installations will be defined through consultation and dialogue with the Facility Operators during the development of their safety cases. It is mandatory for an LPG undertaking to report such incidents to the CER if they become aware of them. There is, however, also a provision for voluntary reporting in the regulations whereby an undertaking may voluntarily submit a report to the CER.

6.5 *Audits and Inspections Regime*

Following assessment and acceptance by the CER of safety cases submitted by undertakings, there is a subsequent need to verify that the safety management arrangements as described in the safety case are being followed in practice. With this in mind, the CER has developed a programme of safety case audits and inspections that are based around the following:

- A review and audit of the Facility Description to ensure that the current gas related activities of the undertaking are fully reflected in the safety case and that there have been no 'material' changes since the initial approval of the safety case, which may impact the risk assessments undertaken;
- A review and audit of the Formal Safety Risk Assessment to ensure that:
 - risk assessments are being reviewed periodically to capture any 'new' or 'changed' safety risks that arise;
 - the risk mitigating measures identified in the risk assessment process have been implemented; and,
 - risks are being managed to a level that the CER deems to be ALARP.

- A review and audit of the Safety Management System to ensure that the safety policy, organisation, planning, implementing, audit and performance monitoring and reviewing systems are effectively implemented;
- A review of the Emergency Procedures to ensure that:
 - emergency management team members are aware of their roles and responsibilities;
 - all emergency contact details are current and updated;
 - regular emergency exercises and training is undertaken.

Additionally, the CER carries out investigations into any incidents that occur as a result of the use of Natural Gas or LPG, as required by the Incident Reporting and Investigation Regime. It may also be involved in activities and investigations that are carried out by the Gas Safety Supervisory body.

The CER has appointed 'Gas Safety Officers' who have powers to enter land, inspect gas pipelines, facilities or installations and fittings etc. and take suitable protective measures in order to safeguard life or property from any dangers arising from the use of natural gas or LPG. Such protective measures may include evacuation of property, disconnection of supply or the issuing of instructions to prevent or reduce any danger arising from natural gas. Gas Safety Officers will exercise these powers where there is a valid reason to believe that a dangerous situation exists, or an activity is being undertaken, that constitutes a danger to life or property from the perspective of gas safety.

It is not intended that Gas Safety Officers should independently issue orders with respect to the operation of major hazard facilities or any other form of control system(s) associated with the processing, storage or transportation of gas. For clarity, the Gas Safety Officers have powers to disconnect gas supplies to individual (domestic or non-domestic) premises where a dangerous situation such as circumstances where meter tampering or illegal use of gas is suspected

or known. Gas Safety Officers have rights of entry to all gas facilities but these rights should be exercised under properly controlled circumstances with due regard to the safe operation of the facilities. It is the intention of the CER that inspections or actions arising from the activities of the GSO will form part of the CER's enforcement process, as outlined in Section 6.5.

The above is not intended to represent the full scope of audit and inspection activity undertaken but to indicate the CER's approach to safety case audits and inspections. The outputs of the regime are used to: (i) inform the CER on the extent of compliance with the safety case requirements by undertakings; (ii) inform the CER on the safety performance of the Gas Safety Supervisory Body; and (iii) to form part of the continual improvement process for the Framework as a whole.

The CER's role with respect to the Safety Case is to:

- Develop the Safety Case Guidelines for providing the safety information requirements within the agreed structure of the safety case;
- Review and accept/approve submitted safety cases as appropriate;
- Monitor and audit the activities of undertakings to check for compliance with their accepted or approved safety cases on a programmed basis; and
- Review 'material' changes and modifications to the safety case as identified by the relevant undertaking.

Currently, the CER requires that each undertaking carry out a full review of its safety case every three years to ensure that the safety case remains as a 'living document' within the organisation and fully reflects the current safety operating

measures and practices. The undertaking is required to confirm to the CER that this 3-year review has been undertaken and report on the findings.

Any natural gas undertaking seeking to participate in the gas market in Ireland will be required to submit a safety case for review and acceptance by the CER before a licence will be issued. Any LPG undertaking operating or seeking to operate a piped distribution network serving two or more domestic final customers will be required to submit a safety case for review and acceptance by the CER before a safety licence is issued.

6.6 Enforcement

Under the 1999 Act, the CER was given certain enforcement powers against natural gas undertakings. The ultimate sanction under Section 26 of the 1999 Act is the revocation of a natural gas undertaking's licence. The 2012 Act grants greater enforcement powers to the CER over both licensed and unlicensed LPG and natural gas undertakings. The most appropriate enforcement action to be taken by the CER in a given set of circumstances will be a function of the nature and seriousness of the contravention. The CER, in carrying out its increased enforcement activities, will seek to be as transparent as possible in its activities.

A brief outline of the new enforcement powers available to the CER is as follows:

(a) Improvement Plan (Section 9JA of the 1999 Act)

If the CER is of the opinion that a LPG or natural gas undertaking is not operating in accordance with its obligations under the legislation, including compliance with the Framework, the CER may give a direction in writing to the undertaking concerned, requiring it to submit to the CER, within a specified time period, a plan (referred to as an "improvement plan") specifying remedial action proposed by the undertaking to rectify the matters set out in the direction.

(b) Improvement Notice (Section 9JB of the 1999 Act)

If the CER is not satisfied that the proposed remedial action is adequate or is satisfied that the circumstances outlined in Section 9JB of the 1999 Act apply, the CER may issue an Improvement Notice to the natural gas undertaking or LPG undertaking. This requires the undertakings to return to a compliant level of activity and indicates the details of the consequences of failure to comply with the notice.

A person who fails to comply with an improvement notice commits an offence and is liable on summary conviction to a Class A fine, or, on conviction on indictment, to a fine not exceeding €25,000.

(c) Prohibition Notice (Section 9JC of the 1999 Act)

Where the CER is of the opinion that there is a substantial risk to safety from an activity being or likely to be, carried out by a natural gas or licensed LPG undertaking, the CER may issue a prohibition notice. The notice will prohibit the carrying on of the activity concerned until the matters which give rise or are likely to give rise to the risk are remedied.

A person who fails to comply with a prohibition notice commits an offence and is liable, on summary conviction, to a Class A fine or, on conviction on indictment, to a fine not exceeding €25,000.

The issuing of a prohibition notice is not contingent on a prior notification period and is also not contingent on issuing an improvement notice/plan first. A prohibition notice may also contain a direction that the notice be brought to the attention of the public generally, or to the attention of any person affected by it.

(d) Restricting/Prohibiting LPG or Natural Gas Activities in Emergencies (Section 9JD of the 1999 Act)

Where the CER considers that the risk to safety of

- (a) human life;
- (b) a piped LPG distribution network or natural gas infrastructure; or
- (c) property not in the ownership of the holder of a LPG safety licence or natural gas undertaking concerned,

is so serious that any of the activities of a natural gas or licensed LPG undertaking should be immediately restricted or immediately prohibited until specified measures have been taken to return to a level of compliant activity, the CER may apply to the High Court *ex parte* for an order restricting or prohibiting the activities concerned.

Emergency orders may be applied for directly by the CER to the High Court. The application can be *ex parte*, which means that it can be done without the undertaking's knowledge and applies immediately. The issuing of a prohibition notice is served directly on the holder of a natural gas or LPG licence, and the undertaking has 7 days to appeal the notice to the High Court, if the CER does not state that an appeal period is included in the notice.

Criminal Prosecution

The 2012 Act increases the number of criminal offences which may be tried summarily or on indictment. These mainly relate to non-compliance with notices, as described above, however they also include:

- Any person making available LPG by way of a piped LPG distribution network for use by individual domestic final customers without a safety

licence may be tried summarily (on conviction, subject to a Class A fine) or on indictment (on conviction subject to a fine of up to €500,000).

It should also be noted that, under the 2006 Act, a person who

- Obstruct or impedes a Gas Safety Officer in the exercise of powers conferred by Section 9J of the 1999 Act,
- Fails or refuses to comply with an instruction given by a Gas Safety Officer or gives information which is false or misleading in a material respect, or,
- Turns on or reconnects the supply of natural gas which supply has been turned off or disconnected by a Gas Safety Officer, without the consent of a Gas Safety Officer,

is guilty of an offence. A person guilty of an offence under this section is liable on summary conviction to a fine not exceeding €5,000 or a term of imprisonment not exceeding 6 months or to both, or on conviction on indictment to a fine not exceeding €15,000 or a term of imprisonment not exceeding 3 years or both.

Finally, in 2014, LPG Incident Reporting regulations were signed into law under the 2012 Act (as described in Section 6.3). It is an offence for an undertaking not to comply with these regulations and report an incident that they become aware of. A person guilty of an offence under these regulations is liable to

- On summary conviction to a fine not exceeding €5,000 or a term of imprisonment not exceeding six months or to both, or
- On conviction on indictment to a fine not exceeding €15,000 or a term of imprisonment not exceeding 3 years or to both.

6.6.1 *Enforcement Process*

It is envisaged that actions or activities arising from the CER's audit, inspection and incident investigation activities will trigger the use of its enforcement powers when necessary.

In seeking to be as transparent as possible in its activities, notices issued by the CER will generally be available to view on the CER website (www.cer.ie), and may also be accessible under the Freedom of Information Act.

The 2012 Act specifically states that a Prohibition Notice may direct an undertaking to bring the notice to the attention of any person affected by it, or to the attention of the public generally. The CER intends to only publish notices to the extent possible/permissible by law.

6.7 *Licensing Regime*

The CER currently licenses natural gas undertakings; these licences contain both economic and safety conditions. Under the 2012 Act the CER has the remit to license certain LPG undertakings with respect to safety. The 2012 Act grants the CER remit to license those undertakings that make LPG available through piped distribution networks for use by multiple individual domestic customers. The licence is a safety licence only. From April 2014, an LPG undertaking operating such a distribution network must apply for a licence from the CER. It is an offence to operate such a network without a licence.

6.8 *Gas Safety Supervisory Body*

Under the Framework 'gas works' as designated by the CER can only be undertaken by competent gas installers who are registered, and subject to ongoing regulation and inspection, by the Gas Safety Supervisory Body appointed by the CER.

6.9 Gas Safety Promotion and Public Awareness

The CER is of the view that, whilst individual undertakings have responsibilities for the promotion of gas safety, a coordinated approach is also required to ensure that consistent and targeted gas safety messages are conveyed to the public. In this regard, the CER's role is one of **coordination but not funding** the various gas and LPG safety promotion and awareness activities. Undertakings are responsible for developing, implementing and funding their respective safety promotional activities which will be primarily, but not exclusively, based on the following:

For transmission and distribution undertakings:

- the protection of underground apparatus and avoidance of third party damage via 'dial-before-you-dig' schemes; and
- safety advertising for reporting of gas escapes via the national gas emergency number and the provision of the national gas emergency response service.

For supply/shippers, safety promotional activities centred on publishing of gas safety literature for:

- advice on "*what to do if you smell gas*";
- dangers of carbon monoxide and advice on servicing and maintenance of gas appliances;
- employing registered gas installers; and
- reporting of potentially dangerous installations or unsafe use of gas.

For all LPG undertakings, safety promotional activities are very similar to those of shippers/suppliers and are primarily centred on:

- advice on "*what to do if you smell gas*";
- advice on the dangers of Carbon Monoxide and advice on servicing and maintenance of gas appliances;

- employing registered gas installers;
- reporting potentially dangerous installations or unsafe use of gas.

The CER liaises regularly with the various gas undertakings, the Gas Safety Supervisory Body and other relevant stakeholders to determine the most appropriate approach for the coordination of gas safety promotions via such media as television, radio and national press advertising. This will involve, where considered necessary, the targeting of gas safety advertising and specific gas safety initiatives towards potentially vulnerable groups of customers.

6.10 Gas and LPG Industry Safety Reporting Regime

The Framework is a risk and outcomes-based approach to the regulation of gas safety and, as such, the safety reporting regime is an important part of the overall Framework. There are three levels of safety reporting requirements within the Framework. These are:

- (i) 'Immediate Incident Reporting' by natural gas and LPG undertakings to the CER where a natural gas or LPG emergency incident has occurred or there has been a natural gas or LPG related injury or fatality.
- (ii) 'Quarterly Safety Reporting' by undertakings to the CER based on a suite of key safety performance indicators that are specific to the operational activities of the undertaking. These safety performance indicators will be developed within the context of the Safety Case Guidelines and through liaison between the CER and the individual undertakings; and

- (iii) 'Annual Safety Reporting' by the CER to the Minister on the natural gas and LPG safety outcomes for the industry and the performance of the Framework.

As stated earlier in Section 6.0, a suite of safety performance indicators have been developed for each category of undertaking. These safety KPIs form the core of the Safety Reporting Regime. As the Framework is risk based in its approach, the CER is of the view that the risk assessment process should largely drive the safety reporting requirements for each undertaking, subject to the specific safety reporting requirements of the CER.

6.11 *Continual Review and Improvement*

As explained earlier, the performance and effectiveness of the Framework is subject to continuous review and improvement based on measurement of the safety outcomes and overall safety performance of the various undertakings and the Gas Safety Supervisory Body. Any modifications and/or improvements that may be required to the Framework that arise from the outcomes of the safety monitoring and reporting regime will be undertaken through liaison between the CER, the various gas and LPG undertakings and other relevant stakeholders.

6.12 *Funding of the Safety Regime*

The funding of the CER's costs relating to the Framework is via a levy imposed on gas market participants. Similarly, the 2012 Act allows a levy to be imposed on licensed LPG undertakings to fund its regulatory activities.

6.13 *Publishing Information on the Operation of the Framework*

The CER is required under the 2006 Act to report to the Minister annually on the functioning of the Framework. In the interests of transparency and to engender the trust and confidence of the general public in the effectiveness of the Framework this report is available via the CER's website and other media as appropriate. Additionally, outputs of the Gas Safety Reporting Framework are collated and published to inform the general public on the ongoing performance of the Framework on a regular basis. The outcomes of gas-related incident investigations will also be published, subject to legal considerations.

6.14 Governance

6.14.1 Existing Governance Arrangements

A Gas Safety Division has been established within the CER with the responsibility to carry out the day-to-day regulation of gas safety for the onshore Irish gas industry via the Framework. The Division has two sections; the Gas Safety Framework Section and the Gas Safety Supervisory Section. Both of these sections are responsible for the operation of the Regulatory Framework for natural gas and LPG. In line with good governance, the CER currently schedules regular meetings to discuss relevant gas safety issues on an ongoing basis with:

- All natural gas undertakings;
- Other relevant organisations with significant interaction/interest in the regime (e.g. NSAI/GTSC, Health and Safety Authority, etc); and
- Other relevant wider industry stakeholders.

These will be expanded to include meetings with LPG undertakings. The original Framework proposed that the CER would be supported in its work by a number of safety governance groups that would comprise of various gas market participants and other expert bodies as required. The current governance system

is loosely based on the proposed arrangements, although there are slight differences.

6.14.2 Current Governance Arrangements

The CER currently liaises on a regular basis with other regulatory bodies and industry participants. The current structure contains both governance and operational groups, as described below.

Gas Safety Promotion and Public Awareness

This group has been established and meets on a regular basis. It comprises gas industry representatives, Gas Safety Supervisory representatives, representatives of the LPG industry, the NSAI, other appropriate stakeholders and the CER. The group works on developing proposals for focusing coordinated customer safety promotion and awareness strategies. It is informed by the safety reporting outputs of the transmission, distribution, shipping and supply undertakings and the Gas Safety Supervisory Body. A small number of LPG undertakings have been voluntarily involved in this group in recent years. Under the 2012 Act, the CER has the legislative power to request that all LPG undertakings contribute to the group, or to the campaigns that it organises.

Gas Safety Committee

The Gas Safety Committee meets three times a year. It is an interface between the transmission and distribution system operator, the CER and the Department of Communications, Energy and Natural Resources. It is responsible for the development of broad safety policy and reviews trends and issues that arise in industry. It is intended that this group will be expanded to include LPG.

Shipper and Supplier Forum

This meeting occurs yearly and is attended by the shipper and supplier undertakings. Its purpose is to provide a forum for discussion of industry and safety issues that arise during the year, and to facilitate discussion between the different members.

A number of other groups exist at an operational level. These are as follows:

Gas Installers Communication Forum

This group is chaired by the CER, and is a communication forum aimed at facilitating discussion between relevant industry stakeholders. Currently, the meeting is attended by representatives of the Gas Safety Supervisory Body (GSSB), members of the Gas Installers Representative Panel (GIRP), Bord Gáis, FAS, FETAC/QQI, a number of LPG undertakings, Association of Plumbing and Heating Contractors of Ireland (APHCI), Certification Bodies and Training Providers.

There are also a number of interface meetings between the CER and various undertakings.

The CER also liaises closely with the Health and Safety Authority (HSA) on gas safety matters that impact on the occupational health and safety of persons. Close cooperation with the HSA on gas safety matters is given high priority by the CER. A Memorandum of Understanding (MOU) is in place between the two bodies, outlining their responsibilities in regulating both natural gas and LPG. The CER will continue to work with the HSA and other regulatory bodies, such as the Health and Safety Authority of Northern Ireland (HESNI) and the Environmental Protection Agency (the EPA) as necessary, to ensure a high standard of safety in the natural gas and LPG industries.

Similarly the CER maintains a close working relationship with the NSAI/GTSC on matters regarding standards and specifications relating to gas safety.

7.0 Summary and Conclusion

This Framework document outlines the CER's responsibilities with respect to safety. It is updated relative to the original Framework document for Natural Gas.