



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

A Natural Gas Safety Regulatory Framework for Ireland

Approach Paper

Decision

CER/07/172

24th October 2007

Purpose of Document

Under the provisions of the *Energy (Miscellaneous Provisions) Act 2006*¹ (the ‘2006 Act’), the Commission for Energy Regulation (the ‘Commission’) has the responsibility to regulate the activities of natural gas undertakings and natural gas installers with respect to safety. As required under that Act, the Commission will discharge this responsibility through the establishment and implementation of a natural gas safety regulatory framework (the ‘Framework’).

The purpose of this decision document is to provide clarity and certainty to the gas industry and the general public on how this Framework will operate. This decision paper takes cognisance of the issues raised by respondents in the consultation paper ‘*A Natural Gas Safety Regulatory Framework for Ireland – Proposed Vision*’ (ref. 07/104). The Commission response to the issues raised during the consultation are outlined in a separate paper ‘*A Natural Gas Safety Regulatory Framework for Ireland – Consultation Response Paper*’ (ref. 07/173). It should be noted that as part of the continuous improvement philosophy of the Framework, this decision document will be subject to annual review by the Commission.

Finally, it should also be noted that the Commission’s decision on its approach for the regulation of gas installers with respect to safety within the natural gas safety framework will be set out in a separate decision paper which shall be published in November 2007.

¹ When they are commenced Sections 12 to 14 of the 2006 Act will amend the Electricity Regulation Act 1999 (the “1999 Act”) by inserting new provisions providing for the new natural gas safety regime. For convenience the relevant provisions of the 2006 Act are referred to in the body of this paper and the relevant provisions of the 1999 Act in footnotes.

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1. Introduction and Background

In 2002, the Commission assumed responsibilities and functions for the regulation of the onshore natural gas market under the *Gas (Interim) (Regulation) Act 2002* (the '2002 Act'²). Essentially the 2002 Act conferred or transferred to the Commission certain powers to act as the independent regulator for the natural gas industry. The Commission is required in carrying out functions and exercising its duties to have regard to the need:

- to promote competition in the supply of natural gas;
- to promote safety and efficiency on the part of natural gas undertakings;
- to ensure that there is sufficient capacity in the natural gas system to enable reasonable expectations of demand to be met; and
- to secure the continuity, security and quality of supply of natural gas.

Although the Commission has the obligation to have regard to the need to promote safety on the part of natural gas undertakings, it has **no express function under the 2002 Act** to regulate such undertakings with respect to safety.

This was a conscious decision on the part of the then Minister for Communications, Marine and Natural Resources³. It was considered by the Minister that, because of the short timescale within which the 2002 Act was required to be enacted, it was not practical to undertake the review and restructuring of the onshore gas safety regulatory framework at that time and that this task should be undertaken after the new regulatory legislation was put in place. It was accepted that although the regulatory framework for natural gas safety in Ireland had been successfully managed up to that time, as the gas market changed (through the introduction of competition), that it would need to be revisited to ensure that an appropriate regulatory regime was in place to address the challenges of a liberalised market.

Therefore that 2002 Act left existing safety structures in place while ensuring that:

- the Commission's duties, as the licensing authority, specifically included reference to the promotion of gas safety on the part of natural gas undertakings; and
- all licensees had certain clear responsibilities in relation to undertaking their licensed activities in a manner that protected both the safety of the public and the safety of the gas supply system.

In November 2004, the Department began the process of updating the gas safety structures with the publication of its legislative proposals for a Gas

² Some of the provisions of the 2002 Act provide directly for the gas regulatory regime. Others amend the 1999 Act or the Gas Act 1976 or other Acts to provide for the regime.

³ The new title for this Department is the 'Department of Communications, Energy and Natural Resources' (the 'Department').

Safety Bill. At the request of the Department, the Commission published a complementary discussion document entitled “*Vision for the Proposed Safety Framework for the Natural Gas Market in Ireland*” (CER/04/355) with the draft Gas Safety Bill in order to inform the public of the proposed implementation of certain key aspects of the new regulatory framework as set out in the draft legislation. In that discussion document the Commission proposed that:

- it would assume the responsibility for the regulation of natural gas undertakings with regard to safety following the enactment of enabling legislation establishing it as the natural gas safety regulator and granting it appropriate powers and authority to discharge its new responsibilities;
- in addition to having responsibility for the promotion of safety, the Commission would be responsible for the establishment and delivery of the gas safety regulatory framework;
- it would discharge its duties through the establishment of a gas safety regulations regime together with the licensing of market participants for supply of gas and operation of network assets, the consenting of gas pipelines and the imposition of any appropriate measures;
- it would be responsible for the appointment and monitoring of a body with responsibility for the certification of gas installations and the development of a framework for the assessment, training and certification of competence of the installers; and
- it would liaise with the Gas Technical Standards Committee (GTSC) of the National Standards Authority of Ireland (NSAI) in discharging its duties.

Responses to the Commission’s proposals at the time were positive.

Subsequently the broad legislative proposals of the Gas Safety Bill were incorporated into Part 3 of the *Energy (Miscellaneous Provisions) Act 2006* giving the Commission new specific functions for the regulation of natural gas undertakings and gas installers with respect to safety.

In July 2007, the Commission published a consultation paper titled '*A Natural Gas Safety Regulatory Framework for Ireland – Proposed Vision*' which was an updated and modified version of the 2004 paper. The Commission received 7 responses to this consultation⁴.

This decision paper takes cognisance of the issues raised by respondents in the consultation and formally sets out the Commission's high level approach for the safety regulation of the Irish gas sector based on the requirements of the 2006 Act.

The paper specifically sets out:

- the legislative landscape in which the natural gas safety regulatory framework resides (Section 2);
- the scope of the Framework (Section 3);
- the evolving gas market which operates within the scope of the Framework (Section 4);
- the key safety risks which must be managed within the Framework (Section 5);
- the Framework and its operation (Section 6); and
- the governance arrangements to ensure the successful operation of the Framework (Section 7).

It should be noted that as part of the continual improvement philosophy of the Framework, this decision paper will be subject to annual review by the Commission.

⁴ The issues identified by respondents and the Commission response to the issues raised are outlined in a separate paper '*A Natural Gas Safety Regulatory Framework for Ireland – Consultation Response Paper*' (ref. 07/173).

2. Legislative Landscape

The *Energy (Miscellaneous Provisions) Act 2006* is the principal piece of legislation in the context of the Commission's gas safety responsibilities. However, there are a number of other Acts and Regulations that relate to gas safety which are pertinent to the Commission's safety role. These are discussed further in Sections 2.2 and 2.3.

2.1 The Energy (Miscellaneous Provisions) Act 2006

Sections 12, 13, and 14 of the 2006 Act give the Commission new responsibilities in the area of gas safety. At a high level, the 2006 Act gives the Commission the responsibility to regulate the activities of natural gas undertakings and natural gas installers with respect to safety and requires the Commission to discharge this responsibility through the implementation and ongoing operation of a natural gas safety regulatory framework. The requirements of each specific section are discussed in turn.

2.1.1 Section 12⁵

This section sets out the scope and the broad form of the natural gas safety regulatory arrangements. It specifically states that it is a function of the Commission to:

- regulate the activities of natural gas undertakings and natural gas installers, with respect to safety (the 'Regulation Function'); and
- promote the safety of natural gas customers and the public generally as respects the supply, storage, transmission, distribution and use of natural gas.

It is also a function of the Commission to consult with the National Standards Authority of Ireland (NSAI) regarding standards and specifications relating to gas safety.

In carrying out the Regulation Function the Commission must, having consulted with the Minister, establish and implement a natural gas safety regulatory framework, and report annually to the Minister on the functioning of the Framework. The Commission may amend/review the Framework as often as it considers 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;

⁵ Section 12 will amend Section 9(1) of and will insert new Sections 9(1G)-(1H) of the 1999 Act.

- a system for the regulation, certification, ongoing inspection of work and competence of individual trained natural gas installers, and the procedures for the investigations of complaints regarding the competence of any particular natural gas installer; and
- procedures for the investigation of any incidents involving natural gas which in the opinion of the Commission warrant investigation and for the making of a report to the Minister in respect of the investigation.

Finally this section gives the Commission the power to require natural gas undertakings to regularly advise and provide information to their final customers and the public relating to:

- best practice in relation to the safe use of natural gas and the operation and maintenance of natural gas fittings; and
- the detection and reporting of natural gas leaks and other faults in natural gas fittings.

2.1.2 *Section 13*⁶

Section 13 provides the legislative basis for the ongoing regulation of gas installers within the Framework described above. This section allows the Commission to appoint a designated body entitled the ‘Gas Safety Supervisory Body’ to register and subsequently regulate natural gas installers with respect to safety on an ongoing basis and in accordance with criteria published by the Commission.

The section also allows the Commission to make regulations relating to gas safety in the performance of its new functions. It specifically states that regulations made by the Commission under this section may provide for:

- specifications or requirements regarding the installation or maintenance of natural gas fittings; and
- the conditions to be fulfilled before natural gas may be connected or reconnected to any premises or part of any premises following the installation, maintenance, modification or repair of a natural gas fitting.

The section also specifies who is responsible for ensuring that a natural gas fitting is safely maintained after the point of delivery of natural gas. This depends on the purpose of premises in question (e.g. dwelling, business premises, common area) and whether or not it is subject to a lease or tenancy.

⁶ Section 13 will insert new Sections 9F-9J into the 1999 Act.

Section 13 provides for powers of entry onto land for gas safety related reasons by Gas Emergency Officers (appointed by the Transmission or Distribution System Operator) and Gas Safety Officers (appointed by the Commission).

2.1.3 *Section 14⁷*

Section 14 of the Act allows for the extension of the Commission's natural gas safety responsibilities to cover Liquefied Petroleum Gas (LPG) in the future.

2.2 Other Relevant 'Commission Specific' Legislation

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

2.2.1 *Gas (Interim) Regulations Act 2002 and Associated Regulations*

As stated earlier, the Commission assumed its responsibilities and functions for the regulation of the onshore natural gas market under the *Gas (Interim) (Regulation) Act 2002*. Section 16(1) of that 2002 Act provides that the Commission 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.

The *Gas (Interim)(Regulation) Act 2002 (Criteria for Determination of Consents) Regulations 2002* and *Gas (Interim)(Regulation) Act 2002 (Criteria for Determination of Applications for Natural Gas Licences) Regulations 2002*, set down criteria on the basis of which the Commission must determine an application for a consent or licence. These include:

- no activity carried out under the consent/licence will adversely affect the safety and security of the natural gas system;
- the pipeline to which the application relates (or, as the case may be, any facility to be operated by the applicant under the licence) will be capable of interoperating in a secure, safe and efficient manner with the natural gas system; and
- the applicant is a fit and proper person to be granted a consent/licence and has the financial capacity and technical skills to carry out the activities to which the application relates and, in the case of a consent, to comply with the consent.

⁷ Section 14 will insert a new Section 9K into the 1999 Act.

Section 16(3) of the 2002 Act requires a natural gas licence holder to operate, maintain and develop its facilities and system with due regard to public safety and to provide any natural gas undertaking with sufficient information to ensure that natural gas can be transported or stored in a manner compatible with the safe operation of the natural gas system.

Under Section 13 of the 2002 Act the holder of the licence to operate a natural gas facility must publish a code of operations in respect of all technical design, operational and other requirements, including technical safety criteria, for connection to and operation of the holder's facilities. This code is subject to the approval of the Commission.

The 2002 Act also provides⁸ that a person cannot construct a downstream natural gas pipeline without the consent of the Commission. Where the Commission gives such a consent it shall attach such conditions as it considers appropriate. These may include a condition requiring specific codes and standards of safety and efficiency regarding the construction of pipelines to be observed.

Under the *Electricity Regulation Act 1999* (the '1999 Act'), the Commission also has enforcement powers in respect of the terms of licences and consents, and the provision of the Act. The ultimate sanction is revocation of the licence. However the Commission also has the power to apply for a High Court order requiring a licensee/consent holder to discontinue or refrain from specified practices where the Commission has given such a holder a direction under Section 23(2) or Section 24 of the 1999 Act and is of the opinion that the holder is contravening or is likely to contravene a condition or requirement of a licence, consent or other requirement imposed by or under that Act.

A Section 23(2) direction to discontinue or refrain from specified practices may be given where the Commission is of the opinion that immediate action is necessary to protect the public interest or safety or the environment or that the holder is contravening or likely to contravene a condition or requirement of a licence, consent or other requirement under the Act and immediate action is necessary to cease or prevent such contravention. A Section 24 direction is given following a notice process and requires the licensee/consent holder to take such measures as are necessary to cease a contravention of a licence/consent or the Act or to prevent future contravention

2.2.2 *Gas (Amendment) Act (1987)*

The Commission has the power under the *Gas (Amendment) Act 1987* (the '1987 Act') to confer certain gas transmission and distribution functions, and ancillary functions. These ancillary functions include any functions

⁸ It does so by substituting section 39 of the Gas Act 1976

that in the opinion of the Commission are necessary for ensuring that in the performance of the transmission and distribution functions the safety of the public and property is, as far as is practicable, secured. Powers conferred may include the power to enter and inspect premises and to take such measures as are considered appropriate to ensure that in the performance of distribution functions the safety of the public and property is, as far as is practicable, secured.

The *Gas (Amendment) Act 1987 (Section 2) Order 1987 (as amended)*⁹ 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 it is required at all times to exercise the practices and standards of a prudent gas undertaking and to have regard to relevant internal standards and practices. It is also required to make safety and incident reports to the Commission and to cooperate with safety investigations by the Commission. Any new operations carried out by Bord Gáis Networks must ensure as far as is practicable that any such operations comply with all relevant codes of practice that the Commission specifies.

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 Bord Gáis Networks the aggregate value of such loss or damage is in excess of €6,348.69.

Bord Gáis Networks must report the incident to the Commission as soon as possible thereafter. The Commission has issued procedures to be followed by Bord Gáis Networks for reporting such incidents to the Commission and their subsequent investigation.

Finally Article 18 of the 1987 Order provides for the Commission to notify Bord Gáis Éireann of the standards to be applied to its operations in the transmission, distribution, shipping and supply of natural gas.

⁹ Similar provisions are contained in the Gas (Amendment) Act 1987 (Section 2) (Distribution) Order 2003.

2.3 Other Relevant Legislation

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

- The *Safety, Health and Welfare at Work Act, 2005* and regulations made under that Act; 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.

Although offshore safety is not currently within the scope of the Framework, as stated in Section 3.2, the *Safety, Health & Welfare (Offshore Installations) Act 1987* and regulations made under that Act are relevant to offshore facilities.

3. The Scope of the Natural Gas Safety Regulatory Framework

The 2006 Act defines the scope of the Commission's gas safety responsibilities and, by extension, the natural gas safety regulatory framework. 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 Framework; and
- the elements which are not currently included within the scope.

3.1 Scope Parameters

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

3.1.1 Responsibility to Regulate

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

3.1.2 Definition of Natural Gas Undertaking

A natural gas undertaking is defined¹⁰ 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 operation 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 Commission's new responsibilities to regulate with respect to safety pertain to the activities of the above licensed consented entities only.

¹⁰ In Section 12 of the 1999 Act

3.1.3 *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 Act¹¹ 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 Commission by regulation designated as gas works.

3.1.4 *Responsibility to Promote*

The Commission considers that its function to promote the safety of natural gas customers and the public generally as respect the supply, storage, transmission, distribution and use of natural gas 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).

The Commission 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.

3.2 Other Relevant Scope Parameters

The demarcation or boundaries of the individual undertakings are defined in Section 4.0 of this document.

3.3 What is Not in the Scope

In relation to the provision in Section 14 of the 2006 Act for the extension of the Commission's natural gas safety responsibilities to cover Liquefied Petroleum Gas (LPG), the Commission does not propose to extend its gas safety responsibilities to include LPG at this time. The Commission will focus its attention on the establishment of the natural gas safety regulatory framework in the first instance. Notwithstanding this, the Framework will be developed in a manner which allows for its scope to be extended in a controlled and coordinated way to incorporate the regulation of LPG after a reasonable period of successful operation.

Finally it should also be noted that the Framework does not include the regulation of upstream pipelines or facilities undertakings with respect to safety, which do not come under the definition of a natural gas undertaking outline in Section 3.1. However it is noted that the Minister previously stated that:

¹¹ See new Section 9G inserted in the 1999 Act.

“I intend to take powers through imminent legislation to place responsibility for gas safety on upstream installations with the CER. CER is currently assuming responsibility for downstream gas safety matters. As with the application of the same monitoring codes to upstream and downstream pipelines, it makes sense to unify the responsible authorities for both”¹²

The Department is currently in the process of developing such legislation to extend the Commission’s responsibility to the regulation of petroleum extraction and production structures and equipment and the use of such structures and equipment with respect to safety. In anticipation of being given this responsibility, the Commission will develop the Framework in a manner which allows for its scope to be extended to include such a responsibility.

¹² Reference:
<http://www.dcmnr.gov.ie/Press+Releases/Statement+from+the+Minister+for+Communications+Marine+and+Natural+Resources+Noel+Dempsey+TD+on+Corri.htm>

4. The Evolving Irish 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, had been 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 the 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, market liberalisation needs to be accompanied by the introduction of a safety framework which will achieve the best possible safety outcomes for the gas industry in Ireland.

The commercial framework and market rules for the Irish gas industry is well established and have been implemented via the Code of Operations. The various market participants have a clear understanding of their roles and responsibilities under these market rules. The natural gas safety regulatory framework and the existing commercial framework will need to be compatible and coherent in their operation. However, for the avoidance of doubt, it is not considered necessary or desirable to modify the existing commercial framework in order to implement the gas safety framework. That said some minor modifications to the Code of Operations may be necessary.

4.1 Overview of Current Irish Gas Market

Currently, the Irish gas market comprises of:

- a gas producer – Marathon Oil Limited;
- an offshore gas storage operator – Marathon Oil Limited;
- a single gas transporter (transmission and distribution) – BGÉ;
- numerous gas suppliers and shippers – (i) Bord Gáis Energy Supply (ii) Flogas (iii) Viridian and (iv) Vayu;
- numerous ‘shipper only’ organisations that supply gas to a single premises only and not to final gas customers;
- gas installers; and
- final customers.

Figure 1 shows the relationships between the various gas market participants and is followed by an outline description of the roles of each.

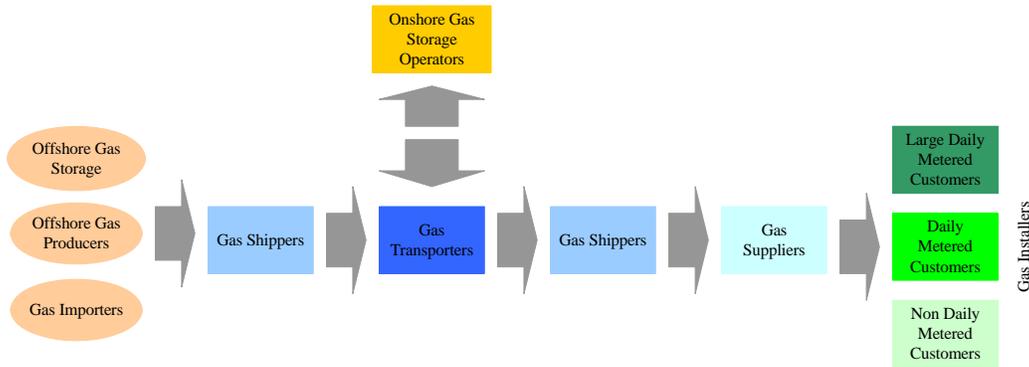


Figure 1: Gas Market Participants

4.2 Gas Producers

Marathon Oil Ireland Limited is the only offshore gas production company currently supplying commercial quantities of gas into Ireland. The Kinsale Head Gas Field is the largest of three reservoirs and was discovered in 1971. The smaller Ballycotton Gas Field and Southwest Kinsale Gas Field were discovered in 1989 and 1995 respectively.

The Kinsale Head Gas Field development comprises two fixed steel production platforms, Alpha and Bravo, each weighing 8,600 tonnes and standing three miles apart in approx. 300 feet of water, an onshore receiving station and 38 miles of 24-inch subsea pipeline connecting the platforms to the onshore receiving station.

The Kinsale Head, Ballycotton and Southwest Kinsale Gas Fields all lie between 25-35 miles off the south coast of Cork. 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 Marathon offshore facility are:

- the subsea pipelines that connect the subsea wells to the two production platforms;
- the Alpha and Bravo 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 Marathon's offshore production facility is the connecting pipework and valve between the Marathon and BGÉ transmission assets at the receiving station.

4.3 Gas Storage

Ireland's only licensed gas storage facility is the Marathon Oil Ireland Limited 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. 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.

Marathon Oil is responsible for the management of emergency incidents with respect to its facilities. The role of the NEM in these circumstances is restricted to the management of the downstream emergency response within the transmission and distribution system.

4.4 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 Bord Gáis Networks, who undertakes 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 2 kms 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 Marathon/ BGE 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 BGN owns and operates the pipework and meters supplying secondary meters, the downstream boundary is the outlet of the secondary meter(s).

With respect to emergency response, even in a liberalised market environment with potentially multiple distributors, the responsibility for providing the emergency response to reports of gas escapes from the general public or other parties, whether inside or outside the property, is best provided by a single organisation. This is to avoid the potential confusion, delay and hand-offs that can arise when other parties operate distribution networks. Broadly, there are two types of gas emergency situations that can arise. These are:

- 'Localised' gas emergencies that are contained in a relatively small geographic area that may involve a reported gas escape and/or loss of gas supply to a single customer or a group of customers; and
- 'Network' gas emergencies that involve the loss of gas supply to large numbers of customers across a wide geographic area.

Localised gas emergencies are managed by Bord Gáis Networks as part of its day-to-day operations in providing the gas emergency response service and there is rarely a requirement for other gas undertakings to participate in the response to such smaller scale emergencies. However, for larger network-wide gas emergencies, the Network Emergency Manager (NEM), a role which is currently undertaken by Bord Gáis Networks, is responsible for managing the coordinated response of all participants that are affected by this larger scale gas emergency situation.

4.5 Gas Suppliers and Shippers

Currently within Ireland, there are two supply and shipper businesses supplying gas to residential customers (Bord Gáis Energy Supply and Flogas) and three supply and shipper businesses supplying gas to non-residential customers (Bord Gáis Energy Supply, Vayu Limited and Viridian Energy Limited). 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. Under the Code, Shippers are required to comply with the requests and instructions of Bord Gáis Networks acting in the role of Network Emergency Manager in the event of a gas emergency being declared. These activities are primarily associated with customer gas load curtailment and the re-profiling of gas injections into, and withdrawals from, the transmission system.

Gas suppliers have no direct relationship with transporters but 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.

4.6 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. Currently, under condition 10 of its Distribution Licence, Bord Gáis Networks is required by the Commission to keep and publish a register of gas installers who possess the requisite qualifications, skills and experience for the safe and proper installation, commissioning, testing, repair, removal, replacement and maintenance of gas fittings. To this end Bord Gáis Networks has established and operates the Register of Gas Installers (RGI). However registration is not mandatory for gas installers. Thus of the estimated 5,000 individuals

working in the gas installation industry, only approximately 800 are captured within the voluntary registration scheme.

This voluntary registration scheme will evolve into a mandatory registration scheme under the provisions of the 2006 Act.

4.7 Gas Customers

There are approximately 575,000 gas customers in Ireland, with approximately 550,000 domestic residential customers and 25,000 commercial/industrial customers. From July 1st 2007, all gas customers are free to choose their preferred gas supplier. It is estimated that the number of gas customers will increase by approximately 30,000 per annum over the next 5 years.

4.8 Future Developments

The market will undoubtedly continue to evolve over the coming years as the market matures and this will present new challenges.

In the short term, a combined (transmission and distribution) independent system operator (ISO) will be established. The ISO will undertake the operation, development and maintenance of the transmission and distribution systems in accordance with the requirements of EU Gas Directive 2003/55/EC.

In the medium term, the Corrib field is expected to commence delivery and it is anticipated that in 2012 the first Irish Liquefied Natural Gas (LNG) terminal could also become operational. There is also the possibility that onshore storage operators may develop gas storage facilities within Ireland or, alternatively, additional offshore storage facilities in Irish coastal waters. In addition, the opening of the remainder of the market to competition and the strengthening of the infrastructure links with Northern Ireland through the South-North pipeline could encourage other changes in the market.

5. Safety Risks Associated with the Storage, Transportation and Supply of Natural Gas

As safety regulator, in line with its new responsibilities, the Commission will ensure that the natural gas safety regulatory framework is appropriate to protect the public from the safety risks that arise from the activities of the various undertakings in the liberalised market and to provide assurance that those undertakings are managing their safety risks to a level that is as low as reasonably practicable. 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).

These gas safety risks are outlined in more detail below.

5.1 Hazards of Natural Gas as a Fuel

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.

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 gas 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 natural gas that is being processed, stored or transported throughout the working life of the asset. Primarily, these loss of containment risks are characterised by:

- Large scale loss of containment from LNG and storage facilities that may have an adverse affect 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. Any new market entrants in Ireland that propose to own and/or operate gas infrastructure assets associated with the LNG importation, storage, transmission or distribution of gas will be required to comply with these existing technical codes and standards.

5.3 Gas Quality and Operating Pressure

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 (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.

5.4 Gas Emergency Response

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 by 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 Network Emergency Manager Framework has been developed to provide for a coordinated response by market participants in the event of such a gas emergency being declared by the Network Emergency Manager.

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 NEM as described above.

5.5 Safe Utilisation of Gas

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

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

Gas installers must be competent, assessed as such, and registered to undertake installation and maintenance activities on gas fittings and appliances. The potential outcomes of improper gas 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 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 installers and not servicing gas-burning appliances regularly. The raising of gas customer safety and public awareness levels will be an important requirement of the Framework.

6. The Natural Gas Safety Regulatory Framework

In developing the natural gas safety regulatory framework the Commission considered the requirements set out in the 2006 Act, the Commission's powers as licensing authority, the experience of gas safety regulation in other liberalised gas markets¹³, the evolving nature of the Irish gas market and finally the nature of the gas safety risks that must be managed.

With this in mind, 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 gas industry, gas customers and the general public in Ireland that are, as a minimum, commensurate with the high level of gas 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 gas undertakings with respect to safety will be enforced through licence conditions rather than through Regulations;
- 4) the ultimate responsibility for gas safety rests with those who create and have control over the risks – i.e. the gas undertakings;
- 5) in discharging its gas safety functions, the Commission will consult and interact with expert bodies who have certain responsibilities relating to gas safety¹⁴;
- 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; and

¹³ See Appendix 1 for a brief synopsis of the Commission's review of the regulatory regimes in the United Kingdom and Victoria (Australia).

¹⁴ For example the NSAI/GTSC has responsibility to ensure that its standards sufficiently address safety.

- 7) the Framework will be such that it allows for its scope to be extended to include LPG and offshore undertakings in a coordinated way as required.

The **approach** of the Commission to gas safety regulation is one where the Framework allows gas 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**.

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 by ensuring that gas related activities within the scope of the Commission’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 gas.

The Commission, 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 and that gas 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. 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 Network Emergency Manager during 'network' gas emergencies. Additionally, all gas undertakings will be required to demonstrate that they have suitable arrangements in place for responding to the requirements of the Network Emergency Manager in the event of large-scale 'network' gas emergencies being declared by the Network Emergency Manager.

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 NEM in such circumstances is to manage the downstream impacts of such emergencies within the transmission and distribution networks.

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 Commission 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 Commission. The connection and re-connection of customers' installations to the gas supply network and the servicing of such installations is an important safety risk issues 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 Commission'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 of premises are aware of their responsibilities in respect to the maintenance of gas fittings downstream of the 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 Commission will develop a suite of **key safety performance indicators (KPIs)** for each key objective, which it will monitor on ongoing basis¹⁵.

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;
- b) A **Gas Safety Supervisory Body** responsible for the registration of gas installers that meet specified criteria of training and competency, and subsequently regulates gas installers via an ongoing inspection and audit regime of work against specified standards;
- c) A **Gas Safety Promotion and Public Awareness** regime that is designed to increase the overall level of gas 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 Commission and subsequent reports by the Commission 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
- e) An **Audit and Inspections** regime that the Commission will use to gain assurance that the various undertakings are operating in compliance with the gas safety management and emergency response arrangements as described in their respective safety cases, and the

¹⁵ The Commission's current proposed KPIs are outlined in Appendix 2. It is the Commission's intention to discuss these safety KPIs with the various gas undertakings and, if considered necessary by the Commission, add to or modify the proposed KPIs. These KPIs will form the basis of the safety reporting by the undertakings.

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.

The diagram on the following page provides a conceptual illustration of the Framework. The key components of Framework are discussed in greater detail in the following sections.

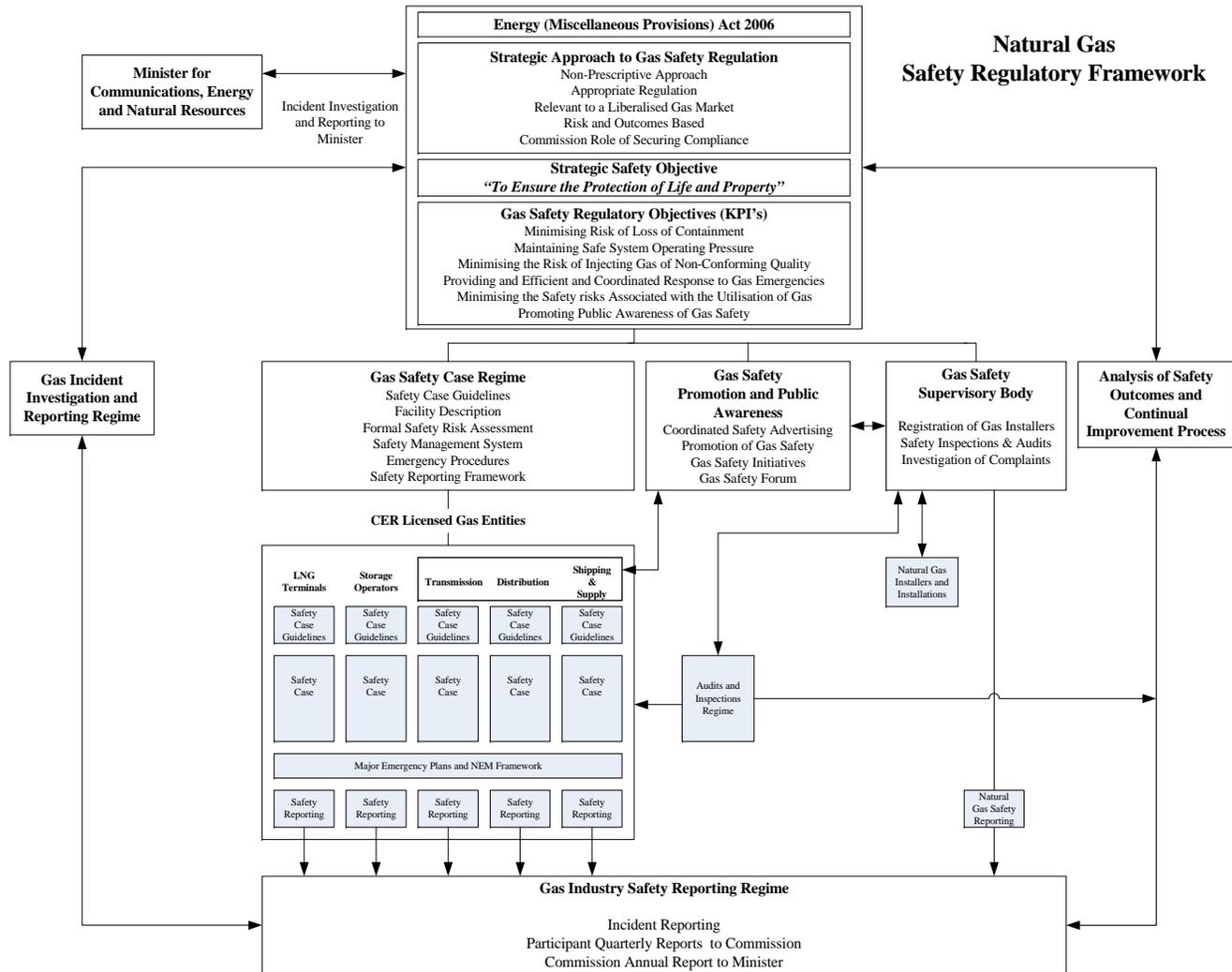


Figure 2: Natural Gas Safety Regulatory Framework (Conceptual illustration)

6.2 Gas Safety Case Regime

The Commission will develop and implement a safety case regime that is risk and outcomes-based but flexible in the approach to the management of 'lifecycle gas safety' and not driven by prescriptive regulation. 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 that comprises 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 gas undertaking. 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. 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 gas infrastructure assets. It is not the intention of the Commission 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 Commission, 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 gas 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 gas 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 Commission, 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 Commission for assessment and, where deemed adequate, acceptance or approval by the Commission. 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 gas undertakings have in place in order to provide an effective and coordinated response to gas emergency situations. The Network Emergency Manager (NEM) Framework is the critically important feature of the various 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 NEM 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.

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 Document.

The Commission'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 appropriate¹⁶;
- 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.

The Commission 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 Commission that this 3-year review has been undertaken and report on the findings.

Any 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 Commission before a licence will be issued.

It is the Commission's view that the establishment of the gas independent system operator (ISO) during 2008 will require that the responsibility for preparing, submitting and managing the separate transmission and distribution safety cases will reside with the ISO.

6.3 Gas Safety Supervisory Body

The Framework will provide for a comprehensive regime relating to the regulation of gas installers. The aim of this regime is that 'gas works' designated by the Commission 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 Commission.

It should be noted that the Commission's decision on its approach for the regulation of gas installers with respect to safety within the natural gas safety framework will be set out in a separate decision paper which shall be published in November 2007.

¹⁶ See Appendix 3

6.4 Gas Safety Promotion and Public Awareness

The Commission 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 Commission's role is one of **coordination but not funding** the various gas 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.

The Commission will liaise 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 – e.g. tenants in rented accommodation, the elderly and low income families.

6.5 Incident Reporting and Investigation Regime

As previously described in Section 2.2.2, Bord Gáis Networks is currently required to investigate natural gas-related incidents and report to the Commission on the outcomes of the investigation. Currently, 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 6.7. However, the Commission may require that other gas related incidents that are not defined as Types A, B or C be subject to investigation and reporting.

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.

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. The Commission will appoint its' own independent expert to investigate any incidents that occur at major hazard installations and make recommendations to the Commission, who will in turn, discuss the implementation of appropriate recommendations for safety improvements with the Facility Operator.

6.6 Audits and Inspections Regime

Following assessment and acceptance by the Commission of submitted safety cases, there is a subsequent need to verify that the gas safety management arrangements as described in the safety case are being followed in practice. With this in mind, the Commission will develop a structured 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;
 - risks are being managed to a level that the Commission 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 Commission will undertake audits/inspections of:

- Investigations carried out by Bord Gáis Networks, or any other undertakings, that are carried out under the requirements of the Incident Reporting and Investigation Regime; and
- Activities and investigations as carried out by the Gas Safety Supervisory Body.

The Commission may appoint a ‘Gas Safety Officer’ who will have powers to enter land (forcibly if necessary) and 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 natural gas. 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 will 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 will 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 will have rights of entry to all gas facilities but these rights will be exercised under properly controlled circumstances with due regard to the safe operation of natural gas facilities.

The above is not intended to represent the full scope of audit and inspection activity to be undertaken but to indicate the Commission’s high-level approach to safety case audits and inspections. The outputs of the regime will be used to: (i) inform the Commission on the extent of compliance with

the safety case requirements by undertakings; (ii) inform the Commission 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.

6.7 Gas 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 gas undertakings to the Commission where a gas emergency incident has occurred or there has been a gas related injury or fatality and the Commission will be required to undertake an investigation and make a report to the Minister;
- (ii) 'Quarterly Safety Reporting' by gas undertakings to the Commission 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 Commission and the individual undertakings; and
- (iii) 'Annual Safety Reporting' by the Commission to the Minister on the gas safety outcomes for the industry and the performance of the Framework.

As stated earlier in Section 6.1, a suite of safety performance indicators will be developed for each category of undertaking. These safety KPIs will form the core of the Safety Reporting Regime. As the Framework is risk based in its approach, the Commission is of the view that the risk assessment process will largely drive the safety reporting requirements for each undertaking, subject to the specific safety reporting requirements of the Commission.

6.8 Continual Review and Improvement

As explained earlier, the performance and 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 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 Commission, the various gas undertakings and other relevant stakeholders.

6.9 Funding of the Gas Safety Regime

The funding of the Commission's costs relating to the Framework will be via a levy imposed on gas market participants. The detailed proposals for the imposition and administration of the levy will be developed shortly by the Commission. Notwithstanding the above, in the interests of transparency the Commission's safety related costs in discharging its gas safety responsibilities shall be displayed separately in its annual accounts.

6.10 Publishing Information on the Operation of the Framework

The Commission 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 it is intended that this report will be made available via the Commission's website and other media as appropriate. Additionally, outputs of the Gas Safety Reporting Framework will be 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.

7. Governance Arrangements

A **Gas Safety Division** has been established within the Commission with the responsibility to carry out the day-to-day regulation of gas safety for the onshore Irish gas industry via the Framework. The Commission will enforce the requirements of the Framework in so far as it relates to the regulation of the activities of natural gas undertakings via licence conditions for each undertaking and not through regulations. However, should this approach not produce the desired safety performance by undertakings, the Commission may choose to develop a safety governance approach based on regulations, a breach of which will comprise a criminal offence.

In line with good governance, the Commission will schedule regular meetings to discuss relevant gas safety issues 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.);
- Other relevant wider industry stakeholders; and
- Consumer groups/associations.

The Commission will liaise closely with the **Health and Safety Authority (HSA)** on gas safety matters that impact on the occupational health and safety of persons. Although the Safety Case is specific to the safe management of the storage, flow of gas and the response to emergencies, the ultimate objective of the Irish gas safety regime is the protection of society, individuals and property from the dangers arising from the storage, transportation and supply of gas and close cooperation with the HSA on gas safety matters will be given a high priority by the Commission.

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

Notwithstanding the above ongoing arrangements, the Commission intend to be supported in its work by a number of safety governance groups that will be established and comprise of various gas market participants and other expert bodies as required. The governance arrangements for the Framework are illustrated in the diagram below.

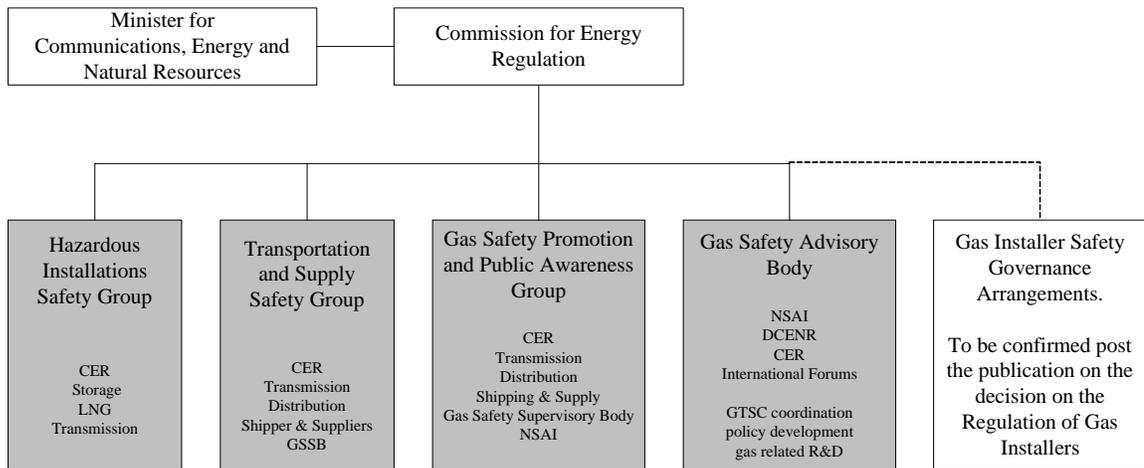


Figure 3: Proposed Governance Arrangements

At an **operational** level there will be two separate safety focus groups comprising:

- a **Hazardous Installations Safety Group** comprising the LNG terminal operators, gas storage operators (offshore and onshore) and the transmission system operator; and
- a **Transportation and Supply Safety Group** comprising the transmission system operator, distribution system operator, shipper & supplier undertakings and the Gas Safety Supervisory Body.

These groups will convene on a six-monthly basis to review the outcome of gas emergency incidents and monitoring of gas safety trends and make recommendations to the Commission on the effective functioning of the framework. Terms of Reference for the operation of these groups will be developed by the Commission through consultation with the relevant undertakings. There will also be bi-lateral meetings with individual undertakings to discuss safety issues on an ad-hoc basis.

The Gas Safety Committee will continue on a temporary basis in its current guise until such time as the new governance arrangements are in place.

The **Gas Safety Promotion and Public Awareness Group** will comprise representatives of BGN Transmission, BGN Distribution, Shipping and Supply representatives, the Gas Safety Supervisory Body, the NSAI, other appropriate stakeholders and the Commission. The purpose of this group is to develop proposals for the focusing of coordinated customer safety

promotion and awareness strategies. Customer safety promotion and awareness advertising will be undertaken at two levels:

- Firstly, at the industry level whereby coordinated TV, radio and press adverts for gas installation and use safety will be targeted both at specific customer groups and the public generally; and
- Secondly, at the undertaking level whereby gas transporters and shippers and suppliers will undertake safety promotion and awareness activities that are specific to their respective undertakings.

The safety reporting outputs of the transmission, distribution, shipping and supply undertakings and the Gas Safety Supervisory Body will inform the Gas Safety Promotion and Public Awareness Governance Group on the strategy for raising gas safety awareness levels. Terms of Reference for this group will be developed by the Commission in consultation with the proposed group members.

The Commission will also be further supported by the establishment of one further group which shall operate at a **strategic level**:

The **Gas Safety Advisory Body (GSAB)** who will comprise representatives of the NSAI, the Department, other international safety regulatory agencies, the Commission and other expert bodies as deemed necessary by the Commission. The role of this body is to advise the Commission on strategic gas safety issues that have the potential to impact the Irish gas industry. Examples of the activities that this group will undertake include:

- Coordination of the development of safety standards with the NSAI/GTSC;
- Development of Gas Safety Policy;
- Advice on gas-safety related R&D;
- EU gas safety-related requirements etc.

In contrast to the other groups referred to above, which will address 'operational' gas safety issues, the role of the Gas Safety Advisory Body is more strategic in nature and has an outward looking focus on the wider, international gas industry. Terms of reference for the functioning of the Gas Safety Advisory Body will be developed by the Commission. Given the nature of the body, it is expected that this body would convene on an annual basis.

The governance arrangements relating to the regulation of gas installers will be set out following the completion of the consultation process outlined in the 'Regulation of the Gas Installer Industry with Respect to Safety' consultation paper.

APPENDICES

Appendix I - Gas Safety Regulation in Other Jurisdictions

The Commission has undertaken a review of the safety regulatory regimes in other jurisdictions internationally in order to ascertain best practice in terms of the approach to the safety regulation of gas undertakings within Ireland. The UK and Victorian (Australia) gas safety regulatory regimes were reviewed in some detail as the gas markets in these countries share certain common features with the evolving Irish gas market.

Both the UK and Australian gas safety regimes have adopted a safety case approach to the regulation of gas safety. The safety case requirements in both jurisdictions are governed by Regulations – the Gas Safety (Management) Regulations 1996 in the UK and the Gas Safety (Safety Case) Regulations 1999 in Victoria. The UK approach to the safety case information requirements under GS(M)R is relatively prescriptive compared to the Victorian regime, which uses a risk and outcomes-based approach to the management of gas safety. The Victorian regime however, uses a more detailed, prescriptive approach to the regulation of gas safety with respect to gas installers and the installation and maintenance of gas fittings and appliances than the UK regime. For illustration, the relevant UK and Victorian S.I.'s with respect to gas safety are shown below:

UK Gas Safety Legislation	Victorian Gas Safety Legislation
Gas Act 1995	Gas Safety Act 1997
Gas Safety (Management) Regulations 1996	Gas Safety (Safety Case) Regulations 1997
Gas Safety (Installation and Use) Regulations 1998	Gas Safety (Gas Quality) Regulations 1999
Control of Major Accident Hazard Regulations 1999	Gas Safety (Gas Installations) Regulations 1999
Pressure System Safety Regulations 2002	
Pipelines Safety Regulations 2003	

Given the similar market characteristics of the Victorian, UK and Irish gas markets and existing regulatory structures within each jurisdiction, the Commission has taken the view that a safety case regime is the most appropriate approach to the safety regulation of gas undertakings in Ireland. Additionally, the Commission is of the view that the Victorian safety case approach – i.e. non-prescriptive, risk and outcomes-based for upstream activities and more detailed and prescriptive for end use customers gas installations and appliances – is the preferred approach for the safety regulation of the Irish gas market.

The key difference between the proposed gas safety regime for Ireland and the existing gas safety regimes for the UK and Victoria is that the Commission is not proposing to develop secondary legislation in the form of Regulations. Instead the Commission intends to use both its existing licensing powers and newly-conferred powers under the Act to undertake the safety regulation of the gas undertakings, primarily in the form of changes to the existing licence conditions that will require the preparation and submission of a safety case. The rationale for this approach based on licence conditions is: (i) the relatively small size and evolving nature of the Irish gas market; and (ii) the relative inflexibility of a regulation-based approach. The Commission is of the view that as the current Irish gas market evolves further and new entrant participants emerge, any necessary changes to the gas safety regulatory framework and the safety case requirements contained therein, can be most easily and readily implemented through changes to licence conditions and not through secondary legislation.

Appendix II -Suggested Gas Safety Key Performance Indicators

No.	Key Objective	Gas Safety Performance Indicator (SPI)
1	Minimising the Risk of Loss of Containment	1.1. No. of public reported escapes: a) external; and b) internal 1.2. No. of 3 rd party damages to: a) transmission pipelines b) distribution mains; and c) distribution services 1.3. No. of cast iron mains fractures 1.4. No. of joint leaks 1.5. No. of mains leak repairs/km 1.6. No. of outstanding leaks 1.7. Length of network leakage surveyed (kms) 1.8. Nos. of survey leaks/km 1.9. No. of gas in building events 1.10. No. of evacuations undertaken 1.11. Length of accelerated mains renewal achieved (kms) 1.12. No. of actionable transmission pipeline corrosion defects detected
2	Maintaining Safe System Operating Pressures	2.1 No. of verified poor pressure complaints (transmission & distribution) 2.2 No. of over-pressure events (transmission & distribution) 2.3 No. of unplanned gas outages affecting: a) > 5 customers b) > 20 customers c) > 100 customers
3	Minimising the Risk of Injecting Gas on Non-Conforming Quality	3.1 No. of gas odorant checks undertaken 3.2 No. of non-compliant gas odorant samples found 3.3 No. and type of gas quality 'excursions' detected
4	Providing an Efficient and Coordinated Response to Gas Emergency Reports and Incidents	4.1 % of uncontrolled PRE's attended within 1 hour 4.2 % of controlled PRE's attended within [4] hours 4.3 No. of transmission system related gas supply emergencies attended 4.4 No. of distribution system related gas supply emergencies attended 4.5 No. of gas quality related gas supply emergencies 4.6 No. of emergency exercises undertaken

5	Minimising the Risks Associated with the Utilisation of Gas	5.1 No. of residential completion certificates issued 5.2 No. of residential installations inspected 5.3 Average number of defects per residential installation inspected 5.4 No. of non-residential completion certificates issued 5.5 No. of non-residential installations inspected 5.6 Average number of defects per non-residential installation inspected 5.7 No. of metering tampering events discovered 5.8 No. of internal gas related incidents attended: a) fires b) explosions c) CO related
6	Promoting Public Awareness of Gas Safety	To be discussed with individual undertakings

Notes:

1. Although statistical reporting is required, the published data must be supported by a commentary that includes:
 - (i) an analysis of any gas safety related trends that emerge from the data;
 - (ii) the causes of any 'significant or unusual' safety-related events; and
 - (iii) the undertakings proposed approach to reducing the likelihood of similar gas safety related events recurring.

Appendix III - Approval or Acceptance of Safety Cases

Safety cases that are submitted to the Commission by undertakings will undergo a process of assessment in order to determine if the demonstrations within the safety case are adequate to reduce safety risks to a level that is ALARP. Should the safety case demonstrations satisfy the Commission's assessment process, the Commission will either: (i) approve; or (ii) accept the undertaking's safety case. Whether a safety case is either 'approved' or 'accepted' is dependant on the nature of the activities that are described in the safety case.

For example, hazardous gas installations such as LNG terminals, gas storage sites and offshore Extraction and Production (E&P) installations are normally subject to an approval regime, which is used to agree or consent to an activity or to approve a procedure which needs to be justified by safety documentation, such as a safety case. Approvals are very specific and are typically used for activities that are not subject to frequent change – i.e. the facility and the operations undertaken within it are relatively 'static' in nature. Once the approval is issued, the procedure or activity must be carried out in compliance with that approval. If changes in the activity occur, the Commission must be informed, the material change to the safety case submitted and subsequently assessed by the Commission. If appropriate, the approval will be renewed. In brief, there is a high degree of safety regulatory control via the approvals system and, provided the safety case contents satisfies the Commission's assessment process, the Commission will 'approve' the procedure or activity.

On the other hand, transmission, distribution and supply and shipper undertakings are more dynamic in nature than major hazard installations as described above and an alternative approach to approval is for the Commission to 'accept' the safety case provided that it is satisfied with the adequacy of the arrangements for managing risks to a level that is deemed to be ALARP. The acceptance approach offers more flexibility and is less prescriptive than the approvals approach and is more likely to lead to arrangements for controlling risk that are tailored for the particular circumstances. This is a more relevant approach for undertakings that are engaged in a wide range of diverse activities and subject to frequent changes in the method of working. It encourages continuous improvement through keeping health and safety documentation up-to-date, reviewing, revising and resubmitting it as necessary, supported by regulatory inspections.

With the above in mind, the Commission proposes to adopt a flexible, non-prescriptive approach to the permissioning of safety cases for gas transmission, distribution and supply & shipper undertakings based on 'acceptance' of the submitted safety case. However, for major accident

hazard installations such as LNG terminals and gas storage sites, the Commission proposes to adopt a more prescriptive approval approach.

It is important to note that approval or acceptance of safety cases is not intended to provide a guarantee of safety in the operation of the duty holder's arrangements. Responsibility for safety can only lie with the duty holder such that safety regulatory approval or acceptance ("permission") is an *acceptance of the duty holder's approach to identifying and meeting safety needs, as demonstrated through the safety case*. It is not acceptance that the duty holder's arrangements are safe.