



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

**Safety Regulation of the Liquefied Petroleum Gas
Industry in Ireland – Phase 2 Legislation
*Consultation Paper***

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CER – Information Page

In May 2009, the Commission published its Policy Paper “*Safety Regulation of the Liquefied Petroleum Gas Industry in Ireland*” (ref. CER/09/082).

Within that paper the Commission recommended that:

i) Phase 1 legislation be developed to address the “LPG installers gap” by extending the existing regulation of natural gas installer infrastructure to include LPG installers. Greater priority is attached to this legislation given that the LPG installers gap represents a higher safety risk. It is the intention of the Department¹ that this legislation will be in place as soon as possible, with a commencement order provision attached to enable the Commission to extend the natural gas installer infrastructure to the LPG installers after a suitable transition period. The Commission will continue to work closely with the Department in this regard.

ii) Phase 2 legislation be developed to address the remaining gaps as a medium term priority. This legislation would provide for the safety regulation of LPG distribution networks, LPG appliance related incident reporting in a domestic setting and the promotion of LPG safety by the Commission. Work on developing this legislation would be commenced by the Department after the Commission has publicly consulted upon the most appropriate framework for such a regulatory system.

The Department is currently in the process of progressing the phase 1 legislation. Thus a section of the *Energy (Biofuel Obligation and Miscellaneous Provisions) Bill 2010* will provide for the extension of the natural gas installer infrastructure to the LPG installers. It is expected that this Bill will be published shortly.

This consultation paper is aimed at informing the development of the Phase 2 legislation to address the remaining gaps as identified in the Commission’s Policy Paper, namely the safety regulation of LPG distribution networks, incident reporting and investigation with regard to LPG appliances in a domestic setting and the promotion of LPG safety.

Target Audience:

This policy paper is aimed at the LPG industry and the general public.

¹ Department of Communications, Energy and Natural Resources

Related Documents:

- [Safety Regulation of the Liquefied Petroleum Gas Industry in Ireland - Policy Paper \(Ref CER/09/082\) - 21st May 2009](#)
- [Regulation of Gas Installers with Respect to Safety, Definition for the Scope of Gas Works – Final Decision Paper – \(ref.CER/09/083\) - 19th May 2009](#)
- [The Commission for Energy Regulation appoints the RGII as the Gas Safety Supervisory Body – 10th November 2008](#)
- [Criteria Document for the Regulation of Gas Installers with Respect to Safety \(Ref CER/08/130\) - 25th July 2008](#)
- [CER – HSA Memorandum of Understanding \(ref. CER/08/104\) – 25th June, 2008](#)
- [Vision for the Regulation of Gas Installers with Respect to Safety \(ref. CER/07/225\) – 18th December, 2007.](#)
- [A Natural Gas Safety Regulatory Framework for Ireland \(ref. CER/07/172\) – 24th October, 2007.](#)

Responses to this consultation should be returned by email, post or fax and marked for the attention of **Eamonn Murtagh** at the Commission.

The Commission intends to publish all submissions received. Respondents who do not wish part of their submission to be published should mark this area clearly and separately or enclose it in an Appendix, stating the rationale for not publishing this part of their comments.

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1.0 Introduction

1.1 The Commission for Energy Regulation

The Commission for Energy Regulation (the ‘Commission’) is the independent body responsible for overseeing the regulation of Ireland's electricity and gas sectors. The Commission was initially established and granted regulatory powers over the electricity market under the *Electricity Regulation Act, 1999*. The enactment of the *Gas (Interim) (Regulation) Act, 2002* expanded the Commission’s jurisdiction to include regulation of the natural gas market, while the *Energy (Miscellaneous Provisions) Act 2006*, granted the Commission additional powers in relation to gas and electricity safety. The *Electricity Regulation Amendment (SEM) Act 2007* outlined the Commission’s functions in relation to the Single Electricity Market (SEM) for the island of Ireland. This market is regulated by the Commission and the Northern Ireland Authority for Utility Regulation (NIAUR). The Commission is working to ensure that consumers benefit from regulation and the introduction of competition in the energy sector.

1.2 Purpose of this paper

The purpose of this paper is to inform the development of the Phase 2 legislation to address the LPG safety regulation gaps as identified in the Commission’s Policy Paper CER/09/086, namely the safety regulation of LPG distribution networks, incident reporting and investigation with regard to LPG appliances in a domestic setting and the promotion of LPG safety.

1.3 Background Information

In May 2009, the Commission published its Policy Paper “*Safety Regulation of the Liquefied Petroleum Gas Industry in Ireland*” (ref. CER/09/082). The conclusions set out in that Policy Paper are set out in the box below.

- | |
|--|
| <ol style="list-style-type: none">1. The vast majority of the LPG supply chain is adequately addressed through existing legislation and regulatory oversight <i>with the following exceptions</i>:<ul style="list-style-type: none">• LPG installers and LPG installations with respect to domestic, commercial and industrial premises²; |
|--|

² The Commission notes that with respect to LPG installations in commercial and industrial premises the *Safety, Health and Welfare at Work Act 2005* and regulations made under that Act are relevant here. When the Commission notes that the safety regulation of LPG installers with regard to commercial and industrial premises is a ‘gap’, it simply is referring to the fact that LPG installers are not subject to explicit safety regulation equivalent to natural gas installers

- LPG distribution networks with respect to underground pipe systems (but not the central LPG storage tank as this aspect is covered under *Dangerous Substances (Storage of Liquefied Petroleum Gas) Regulations* 1990) ;
- LPG appliance related incident reporting in a domestic setting; and
- the need for statutory responsibilities to be placed on undertakings to promote the safety of LPG customers and conduct LPG safety campaigns with respect to the safe utilisation of LPG.

2. The full commencement of Section 14 of the *Energy (Miscellaneous Provisions) Act 2006* (“the 2006 Act”) on an ‘as is’ basis will result in a significant amount of regulatory overlaps between the Commission and the Health and Safety Authority (“the HSA”) without any clear public safety benefits whilst also placing an unduly onerous regulatory burden upon the industry.

3. The provisions of Section 14 of the 2006 Act as it currently stands are not sufficient to address the identified safety gaps for a number of reasons.

Firstly, the term “*LPG undertaking*” is not defined in primary legislation which presents difficulties with respect to whom the safety framework provisions would apply.

Secondly, the Commission does not have a licencing relationship with “*LPG undertakings*”, as is the case with natural gas undertakings, and thus does not have a mechanism to enforce compliance with any safety conditions it sets out as part of a LPG safety regulatory framework. If it is considered necessary to regulate the LPG distribution networks area of the LPG supply chain, further primary legislation will be required to enable the enforcement of any safety requirements. This should provide for the placing of statutory responsibilities on LPG undertakings to promote the safety of LPG customers and conduct LPG safety campaigns with respect to the safe utilisation of LPG.

Finally, Section 14 does not extend the gas safety provisions to LPG with regard to Section 11 of the 2006 Act. Given that Section 11 defines a natural gas fitting, and the definition of a natural gas fitting is the basis on which the Commission can designate gas works, it means that ‘LPG’ gas works cannot be designated under the 2006 Act. The designation of gas works is fundamental to the operation of the installer regulatory system as only registered gas installers can undertake gas works. If ‘LPG’ gas works cannot be designated, the works which only registered ‘LPG’ gas installers can undertake cannot be restricted, and thus the regulatory system cannot work effectively.

4. A sensible boundary between: (i) the current safety enforcement responsibilities of the HSA under existing legislation; and (ii) the potential future safety enforcement responsibilities of the Commission with respect to the four enforcement gaps identified exists at:

- The outlet of the LPG tank or cylinder emergency control valve. The installation downstream of this point is the customer’s property;
- The underground LPG distribution networks that comprise mains and service pipes that distribute LPG to end-users together with the primary meter installations through which LPG is measured for billing purposes but excluding the LPG storage tank. The upstream boundary of these distribution networks is the outlet connection of the LPG tank emergency control valve and the downstream boundary is the outlet of the primary meter at the customer’s premises (see Figure 5);

The enforcement of safety downstream of these boundaries should be the responsibility of the Commission.

The Policy Paper went on to propose that:

- i) *Phase 1 legislation be developed to address the “LPG installers gap” by extending the existing regulation of natural gas installer infrastructure to include LPG installers. Greater priority is attached to this legislation given that the LPG installers gap represents a higher safety risk. It is the intention of the Department³ that this legislation will be in place as soon as possible, with a commencement order provision attached to enable the Commission to extend the natural gas installer infrastructure to the LPG installers after a suitable transition period. The Commission will continue to work closely with the Department in this regard.*

- ii) *Phase 2 legislation be developed to address the remaining gaps as a medium term priority. This legislation would provide for the safety regulation of LPG distribution networks, LPG appliance related incident reporting in a domestic setting and the promotion of LPG safety by the Commission. Work on developing this legislation would be commenced by the Department after the Commission has publicly consulted upon the most appropriate framework for such a regulatory system.*

This consultation paper is aimed at informing the development of the Phase 2 legislation to address the remaining gaps as identified in the Commission’s Policy Paper, namely:

- the safety regulation of LPG distribution networks;
- incident reporting and investigation with regard to LPG appliances in a domestic setting; and
- the promotion of LPG safety.

1.4 Structure of Paper

Section 2 of the paper provides an overview of the LPG supply chain in Ireland, outlines the proposed demarcation of safety responsibilities between the HSA and the Commission and describes the various arrangements by which LPG domestic customers are typically supplied with LPG whether by means of connection to: (i) a LPG distribution network; (ii) a LPG storage tank; and (iii) LPG cylinders. A description of the safety issues that will need to be addressed under each of the various supply arrangements is also provided. Finally section 2 provides an analysis of the arrangements for LPG supply to commercial customers from the perspective of extending ‘Gas Works’ to commercial premises at some point in the future.

³ Department of Communications, Energy and Natural Resources

Sections 3 and 4 describes the approaches adopted for the safety regulation of LPG in those jurisdictions which have broadly comparable gas safety regulatory arrangements to that in Ireland, notably Great Britain (GB) and Australia. The regulatory authorities in GB are Ofgem and the Health and Safety Executive, and the regulatory authorities in South Australia are the Essential Services Commission for South Australia and the Office of the Technical Regulator.

Section 5 presents the high level legislative proposals to enable the Commission to address the three safety gaps as identified in the Commission's Policy Paper.

Section 6 summarises the key areas on which comment is sought.

1.5 Responding to this paper

Comments should be sent to Eamonn Murtagh, Gas Safety Manager at emurtagh@cer.ie no later than 5th March, 2010. Comments in electronic format are preferable, however comments may also be posted to the Commission at the following address:

Eamonn Murtagh,
Gas Safety Manager,
Commission for Energy Regulation,
The Exchange,
Belgard Square North,
Tallaght,
Dublin 24

The Commission intends to publish all submissions received. Respondents who do not wish part of their submission to be published should mark this area clearly and separately or enclose it in an Appendix, stating the rationale for not publishing this part of their comments.

2.0 Current LPG Supply Arrangements & Responsibilities for Safety

A key conclusion of the Commission's Policy Paper from May 2009 is that the vast majority of the LPG supply chain in Ireland is adequately addressed through existing legislation and regulatory oversight from the perspective of safety. However a number of key safety 'gaps' were identified to be addressed including:

- the safety regulation of LPG distribution networks;
- incident reporting and investigation with regard to LPG appliances in a domestic setting; and
- the promotion of LPG safety.

Figure 1 on the following page illustrates the proposed a demarcation of safety responsibility between the HSA and the Commission with respect to the addressing these key safety gaps.

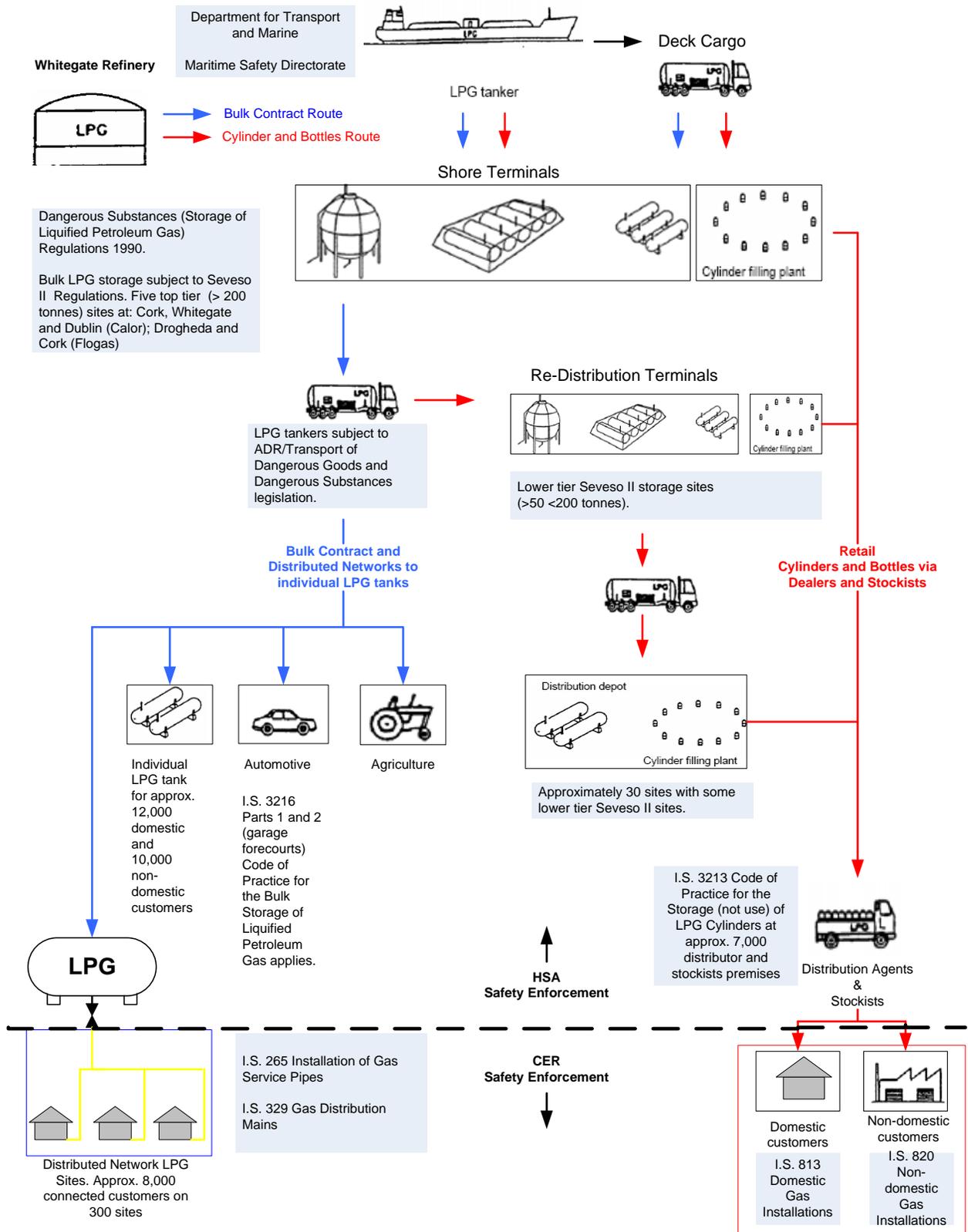


Figure 1: LPG Supply Chain and Proposed Demarcation of Safety Responsibilities

In order to enable the Commission to adequately address the identified safety gaps, further detailed analysis is required. This section of the paper presents a consideration of the activities of both: (i) LPG suppliers; and (ii) LPG distribution network operators in terms of the manner in which LPG is supplied to domestic customers in line with the proposed demarcation of responsibilities between the HSA and the Commission.

It should be noted that for the purposes of this paper the following definitions of LPG suppliers and LPG distribution network operators are used.

- (i) LPG suppliers are defined as those undertakings that import LPG to Ireland from overseas and/or purchase LPG from refineries within Ireland.
- (ii) LPG distribution network operators are those undertakings that own and operate LPG distribution networks through which LPG is conveyed to end use customers who are connected to the LPG distribution network.

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

2.1 Supply via Above Ground LPG Storage Tank(s)

Individual domestic customers can be supplied with LPG fuel via a combination of: (i) LPG storage tank; (ii) underground pipe that connects the tank to the property; and (iii) installation pipework and LPG burning appliances. The general layout is shown below in Figure 2 below.

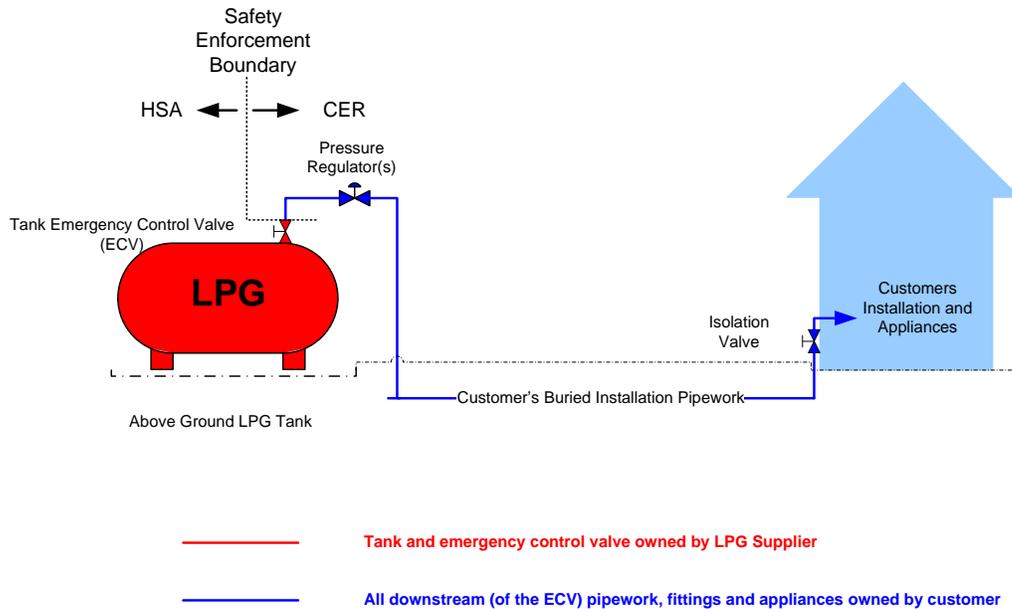


Figure 2: Supply via Above Ground LPG Storage Tank

Under the above arrangement, the LPG Supplier installs and refills the LPG storage tank and retains ownership of the tank. The enforcement of safety arrangements with respect to the LPG tank is the responsibility of the HSA under the “*Dangerous Substances (Storage of LPG) Regulations 1990*” in addition to general workplace safety, health and welfare legislation. Figure 2 shows the proposed safety enforcement boundary between the HSA and the Commission at the outlet of the tank emergency control valve (ECV). The pipework connecting the LPG storage tank to the customer’s property is normally buried below ground due to the remoteness (recommended safety distance) of the installed LPG tank from the property and this pipework is the property of the customer NOT the LPG supplier. Therefore, the customer has responsibility for maintaining this buried pipework and ensuring that it is fit for purpose to convey LPG.

Under the above arrangement, the Commission’s responsibilities for safety enforcement under the above supply arrangement would include:

- The safe installation of customer-owned internal pipework and the various LPG burning appliances inside the customer’s property; and

- b) The customer-owned external pipework connecting the LPG storage tank to the customer’s property that is normally buried below ground due to the remoteness of the installed LPG tank from the property- i.e. (minimum recommended safety distances). The safety and integrity of this buried installation pipe up to the isolation valve at the entry point to the property is an area of special safety concern. The recommended material for constructing buried pipework is non-corroding polyethylene (ref. *I.S. 813:2002 Domestic Gas Installations, I.S. 265 Installation of Gas Service Pipes and I.S. 266 Polyethylene (PE) Pipes and Fittings for Natural Gas, Manufactured Gas and LPG*), although older, legacy pipework may be constructed of steel (protected or unprotected), or, in some cases, copper pipe (coated or uncoated). As LPG is heavier than air, any leaks of LPG from this buried pipework, whether due to corrosion or damage, tend to accumulate at low points – e.g. drains, ducts and cellars/basements - and is not readily dissipated in the same way as natural gas, which is lighter than air. It is important from a safety perspective therefore, that domestic customers are made aware that this external, buried installation pipe is designed, constructed and maintained by competent persons. A typical layout is shown in Figure 3 below.

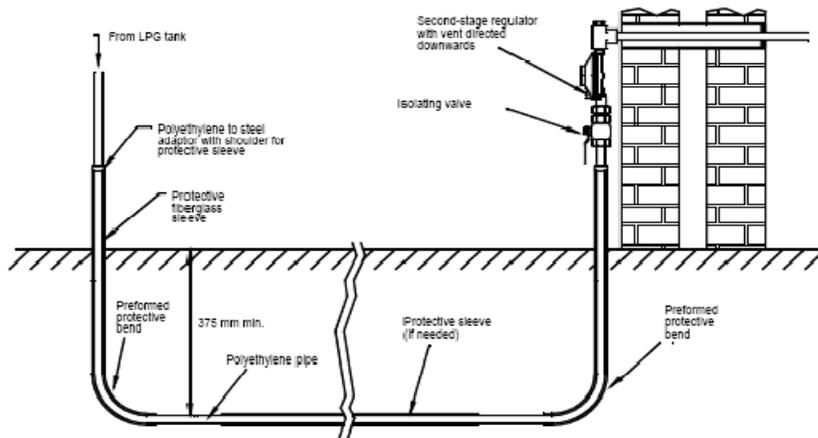


Figure 3: Example of External Buried Pipework for LPG (source: *I.S.813:2002, Annex G*)

In order to regulate the risks associated with this buried external pipework connecting the LPG tank to the customer’s internal gas installation pipework the Commission propose to include this section of pipe within the scope of ‘LPG Gas Works’ for domestic customers. This means that only registered gas installers will be able to carry out such LPG gas works, which includes any work on a LPG gas fitting within the scope of I.S. 813.

The Phase 1 legislation that is currently being developed by the Department to address the “LPG installers gap” by extending the existing regulation of natural gas installer

infrastructure to include LPG installers, will enable the Commission to address items a) and b) above as only competent LPG installers will be able to undertake ‘*LPG Gas Works*’ and would be required to issue a Certificate of Compliance for all new works undertaken.

However, there is potentially legacy external buried installation pipework in place that, in all probability, does not comply with current codes and standards and there is a role for the Commission and LPG suppliers in educating customers on the need to ensure that such buried pipework is fit-for-purpose and safe to convey LPG via its promotion of gas safety obligations.

The specific safety-related areas which should be addressed by the **Commission** include:

- Educating domestic customers on the need to engage competent LPG installers for all ‘*LPG Gas Works*’;
- Informing customers of the risks and dangers associated with LPG leaks from older, external, buried installation pipework that may be corroded or generally not fit for purpose;
- Developing a regime for the reporting and subsequent investigation of incidents related to LPG installations and appliances in domestic properties, including the external buried pipework between the LPG tank and the isolation valve at the customer’s property, by the Commission; and
- The appointment of LPG ‘Safety Officers’ by the Commission with rights of entry and the ability to act or direct with respect to ‘*LPG fittings*’.

The specific safety-related areas which should be addressed by **LPG Suppliers** with respect to this supply arrangement and under any new regulatory regime are:

- Carrying out safety promotional measures to ensure that customers are aware that any buried installation pipework downstream of the LPG tank must be in a fit condition for the safe supply LPG. Clearly, a simple, visual examination is not suitable for buried pipe and customers should be encouraged to ensure that buried pipe is fit-for-purpose;
- Promoting general LPG safety to the customer;
- Responding to public reported escapes of LPG leaks either outside or inside the property and leaving the site in a safe condition; and
- Reporting of LPG related incidents.

2.2 Supply via Above Ground LPG Cylinders

An alternative to LPG storage tanks as described in Section 2.1 is the situation whereby individual domestic customers are supplied via LPG cylinders connected together through a pipework manifold arrangement as shown below in Figure 4. Similarly, the LPG cylinders are installed, refilled and owned by the LPG Supplier, but in this circumstance, there may not be an external, buried installation pipe connecting the LPG cylinders to the customer’s property as the LPG cylinders tend to be sited close to the property (subject to certain restrictions on the quantity of LPG stored). The enforcement of safety arrangements with respect to the LPG cylinders is the responsibility of the HSA under the “*Dangerous Substances (Storage of LPG) Regulations 1990*” in addition to general workplace safety, health and welfare legislation. Figure 4 shows the proposed safety enforcement boundary between the HSA and the Commission as the cylinder emergency control valve that is fitted in the ‘head’ of the LPG cylinder.

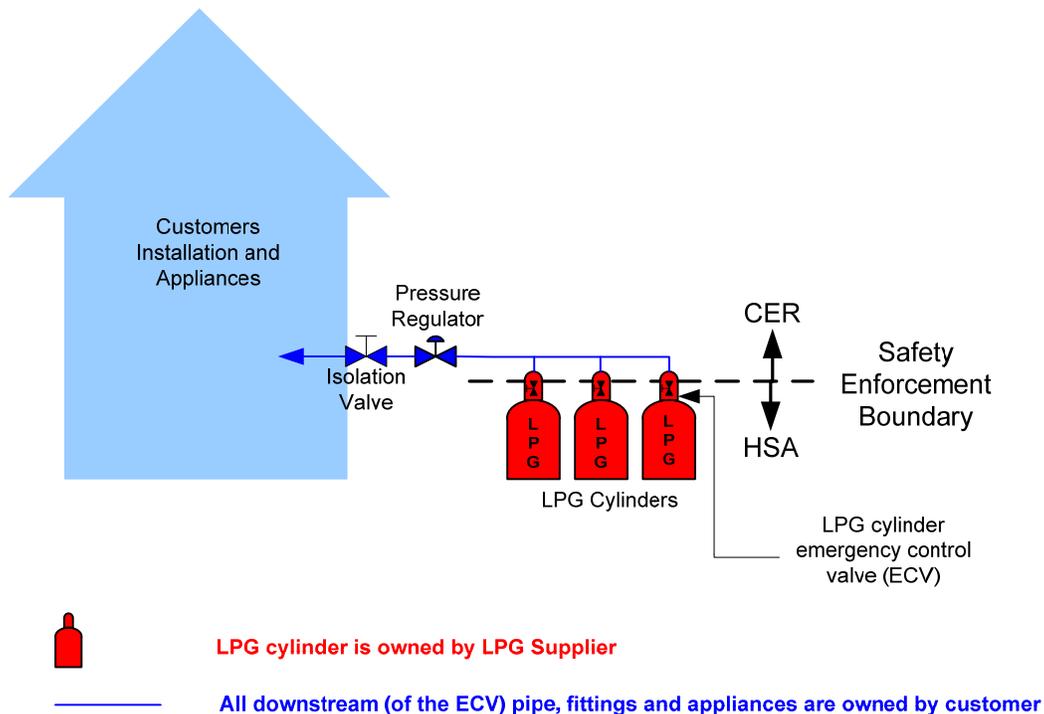


Figure 4: Supply via Above Ground LPG Cylinder(s)

The pipework manifold that connects the LPG cylinders together with the downstream (of the ECV) pipe, fittings and appliances are the property of the customer and, therefore, must be properly maintained by the customer.

The specific safety-related areas to be addressed by the **Commission** are the same as for LPG storage tanks as in 2.1 above with the exception of the external, buried

installation pipework as, in the case of LPG cylinders, the connecting pipework is usually constructed above ground and is visible for inspection by the customer (owner) and the LPG supplier who installs and refills the cylinders. It is the Commission's view that the external pipework connecting the LPG cylinders to the customer's internal gas installation pipework is included within the scope of 'LPG Gas Works' as described in Section 2.1 above.

The specific safety-related areas to be addressed by **LPG Suppliers** are the same as set out in Section 2.1 above. The LPG supplier should assure itself that: (i) the connecting pipework between the LPG cylinders' ECV and the customer's isolation valve is suitable, fit-for-purpose and safe for the supply of LPG fuel by means of a visual inspection; (ii) that the safety of LPG is effectively promoted to the customer; (iii) that an emergency response service for attending and making safe reports of LPG escapes is in place; and (iv) LPG related incidents are reported to the Commission.

2.3 Supply via Underground LPG Distribution Networks

An alternative LPG supply arrangement to LPG storage tanks and cylinders as described in Sections 2.1 and 2.2 is the situation whereby multiple domestic customers are connected to an underground distribution network of mains and service pipes that distribute LPG fuel to individual properties from a central LPG storage tank(s) that may be buried or mounded at a location suitably remote from the properties. The operating pressure of LPG distribution networks is typically 1.0 barg. The typical configuration of the LPG supply arrangement is shown below in Figure 5.

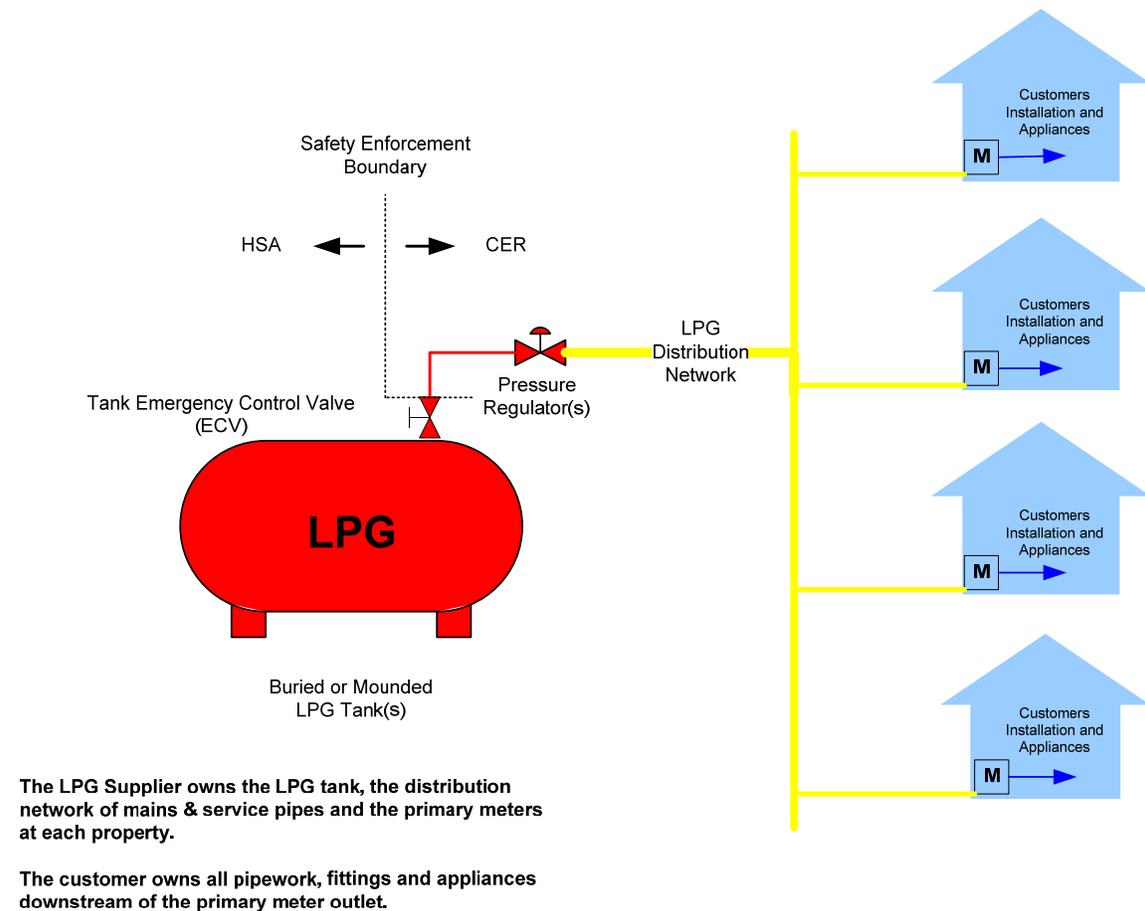


Figure 5: Supply via Underground LPG Distribution Networks

In the above configuration, the LPG Supplier owns the LPG tank(s), the pressure regulating equipment, the underground network of mains & service pipes and the primary meters at each property and is therefore responsible for the maintenance of these assets. The customer owns the pipework, fittings and appliances that are downstream of the primary meter outlet and is therefore responsible for the maintenance

of this downstream installation pipework. This downstream installation pipework will be included in the scope of LPG Gas Works and only registered gas installers will be authorised to undertake such work.

The specific safety-related areas which should be addressed by the **Commission** will include:

- Developing and implementing a safety regulatory framework to ensure the proper design, construction, testing & commissioning and operation & maintenance (including emergency response arrangements) of LPG distribution network infrastructure, which includes pressure regulators, mains, services and primary meters, in accordance with approved codes and standards;
- Developing a regime for the reporting and subsequent investigation of incidents related to LPG distribution networks and installations and appliances in domestic properties;
- Educating domestic customers on the need to engage competent LPG installers for all '*LPG Gas Works*'; and
- The appointment of LPG 'Safety Officers' by the Commission with rights of entry and the ability to act or direct with respect to '*LPG fittings*'.

The safety responsibilities of **LPG Distribution Network Operators** should be to ensure that:

- LPG distribution networks are designed, constructed, tested & commissioned and operated & maintained in accordance with approved codes and standards;
- Ensuring the safe operating pressure limits of the LPG distribution network;
- Carrying out periodic leakage surveys of the distribution network in a manner suitable for the detection of heavier than air gases; and
- Responding to reports of third party damages to the distribution network and public reported escapes of LPG, whether internal or external, and ensuring that any leaked LPG is safely cleared before leaving site.

LPG Distribution Network Operators should also be required to report LPG-related incidents associated with the distribution network to the Commission.

The safety responsibilities of **LPG Suppliers** include the safety promotion of LPG to domestic customers and reporting of incidents relating to domestic appliances in the home. The LPG Distribution Network Operator and the LPG Supplier are, in most cases, the same organisation or legal entity.

2.4 Supply of LPG to Non-Domestic Premises

Under the current arrangements for natural gas installers, ‘Gas Works’ is designated for domestic customers and will be extended to commercial customers at some stage in the future. With this in mind, this section describes the Commission’s proposal for establishing the ‘boundary’ for commercial ‘LPG Gas Works’ with respect to workplace locations so as to facilitate the regulation of gas installers in a non-domestic setting. It should be noted that there is currently no intention to extend a definition of ‘Gas Works’ to industrial customers as this customer segment tends to utilise highly specialised gas burning processes.

The HSA has responsibility for the enforcement of workplace safety, health and welfare under legislation such as the *Safety, Health and Welfare at Work Act 2005*, the *Safety, Health and Welfare at Work (General Application) Regulations 2007* and, specifically with respect to LPG, the *Dangerous Substances (Storage of LPG) Regulations 1990*.

The Commission, therefore, proposes that safety of LPG Gas Works for commercial properties are enforced by the Commission such that only registered LPG installers may be used to install pipework and appliances downstream of the LPG tank emergency control valve as shown in Figure 6.

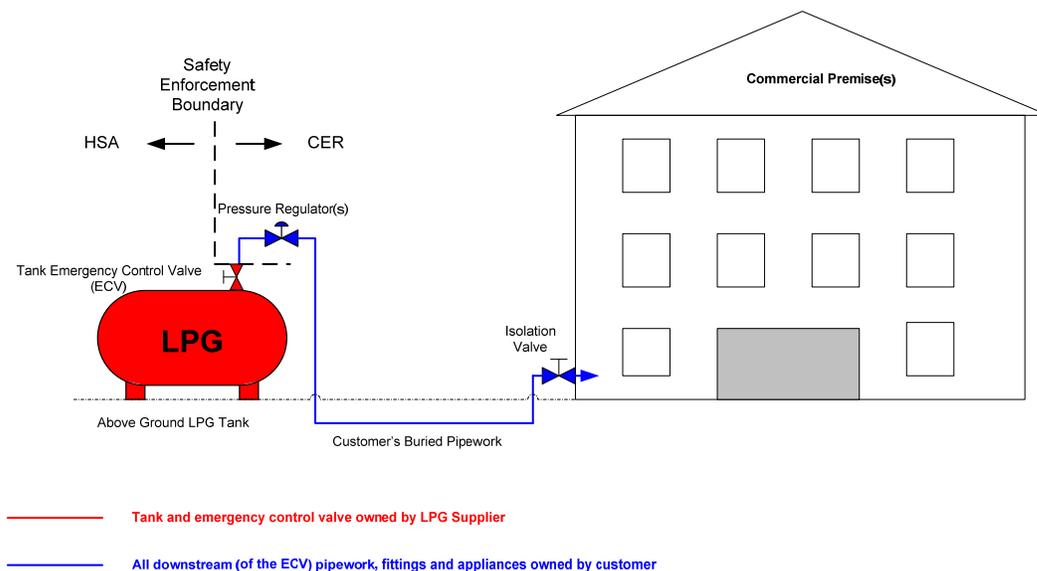


Figure 6: Proposed CER Boundary of Responsibility for Non-Domestic Premises

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

The Commission's responsibility for '*LPG Gas Works*' in commercial properties and the requirement to use only registered LPG installers, will not overlap with employers' general workplace safety, health and welfare responsibilities for commercial properties – i.e. places of work - as enforced by the HSA under existing legislation.

The specific safety-related areas which should be addressed by the **Commission** include:

- Educating non-domestic customers and employers on the need to engage competent LPG installers for all commercial '*LPG Gas Works*';
- Carrying out safety promotional activities to inform customers and employers of the risks and dangers associated with LPG leaks from older, external, buried installation pipework that may be corroded or generally not fit for purpose to convey LPG;
- Appointing LPG 'Safety Officers' with rights of entry and the ability to act or direct with respect to '*LPG fittings*'.

The specific safety-related areas which should be addressed by **LPG Suppliers** under this supply arrangement are:

- Carrying out safety promotional measures to ensure that customers and employers are aware that any buried installation pipework downstream of the LPG tank must be in a fit condition for the safe supply LPG. Clearly, a simple, visual examination is not suitable for buried pipe and customers and employers should be encouraged to ensure that buried pipe is fit-for-purpose to convey LPG;
- Promoting general LPG safety to the customer; and
- Responding to public reported escapes of LPG leaks either outside or inside the property and leaving the site in a safe condition.

3.0 Approach to the Safety Regulation of LPG in GB

In order to provide relevant context to the legislative proposals set out in Section 5, Sections 3 and 4 outline the approaches adopted for the safety regulation of the identified ‘safety gaps’ in GB and South Australia, jurisdictions which have broadly comparable gas safety regulatory arrangements to that in Ireland.

3.1 Licencing of LPG Distribution Networks in GB

The economic regulator and licencing authority for the natural gas sector in GB is Ofgem. Ofgem’s statutory powers are laid out in the *Gas Acts of 1986 and 1995* and include protecting the interests of gas consumers in relation to gas conveyed through pipes connected to the national (natural) gas transportation system. Ofgem’s remit with regard to LPG extends to a very small number of LPG networks (4 in total supplying LPG to c.8,400 customers, 95% of which are located in Scotland) that had been supplied by the former national, public sector entity, the British Gas Corporation, prior to privatisation in 1986 and subsequently regulated under Special Condition 18 of Transco’s Gas Transporter licence (now National Grid and Scotia Gas Networks). Other than the historical anomalies in these four areas, the supply of LPG is not covered by regulation or licencing arrangements since it had always been supplied by the private sector in the same way that central heating oil had been supplied; there had always been a choice of supplier, hence there was never seen to be a need for licencing and regulation.

However, there are a number of relatively small, residential developments, known as metered estates, with domestic customers connected to LPG networks that are supplied from a central LPG storage tank(s). These sites tend to be owned and operated by LPG suppliers but are not subject to a licencing regime (excluding caravan sites that are licenced by local authorities under the *Caravan Sites and Control of Development Act 1960*).

3.2 Safety and Technical Regulation of LPG Networks in GB

The safety and technical regulator for the LPG sector in GB is the Health and Safety Executive (HSE). The key pieces of legislation that applies to gas pipelines and installations and are enforced by the HSE are the:

- *Pipelines Act 1962*;
- *Pipelines Safety Regulations 1996* (PSR);
- *Gas Safety (Management) Regulations 1996* (GSMR); and
- *Gas Safety (Installation and Use) Regulations 1998* (GSIUR).

PSR and GSMR broadly cover the gas network up to and including the customer's emergency control valve (ECV).

- (i) The PSR contain provisions for ensuring that pipelines are designed, constructed and operated safely and cover pipelines containing “*dangerous fluids*” including LPG.

- (ii) The GSMR contains provisions for:
 - defining the natural gas network;
 - specifying the duties on persons conveying natural gas;
 - establishing the requirement for and contents of a gas transporters safety case; and
 - dealing with gas escapes and carrying out investigations

However, GSMR only applies to natural gas and LPG is specifically excluded, therefore, these Regulations do not apply to LPG networks.

- (iii) The GSIUR was drafted for domestic premises and, in terms of demarcation, applies to gas fittings downstream of the ECV

There is close collaboration between the natural gas and LPG sectors on technical standards and various Institution of Gas Engineers and Managers (IGEM) Recommendations are used for LPG distribution networks – e.g. *IGE/TD/3 Steel and PE Pipelines for Gas Distribution*; and *IGE/TD/4 Gas Services*. UKLPG (the representative trade association body for the LPG sector) also publishes codes of practice (COP's) in relation to the design, construction and operation of LPG networks – e.g. *Code of Practice 25 – LPG Central Storage and Distribution Systems for Multiple Customers*, although these COP's represent 'best practice' and are not statutory obligations.

3.3 Reporting and Investigation of LPG-related Incidents in GB

Most investigations of fire and explosion incidents following gas escapes, or cases of carbon monoxide poisoning from the use of faulty gas appliances, are instigated by reports made under the *Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* (RIDDOR). Incidents upstream of the isolation valve are dealt with by the HSE under the PSR (for LPG networks) whilst incidents downstream of the isolation valve are dealt with by the HSE under the GSIUR but only for those domestic and commercial premises that are subject to the GSIUR. Factories were excluded from GSIUR as these premises are covered by other legislation – e.g. “*Provision and Use of Equipment Regulations 1995*” (PUWER) and the “*Dangerous Substances Explosive Atmospheres Regulations 2002*” (DSEAR).

3.4 Safety Promotion of LPG in GB

There are no legislative requirements to undertake safety promotion for LPG in GB although the main LPG suppliers and UKLPG carry out LPG safety promotional activities via their respective websites.

4.0 Approach to the Safety Regulation of LPG in South Australia

4.1 Licencing of LPG Distribution Networks in South Australia

The objectives of the South Australia *Gas Act 1997* include the establishment and maintenance of a safe and efficient system of LPG distribution networks, and the establishment and enforcement of proper standards of safety, reliability and quality in these networks. The owners and operators of LPG distribution networks must be licenced under the Act by the Essential Services Commission of South Australia (ESCOSA) who is the licencing authority and economic regulator for South Australia. Under the Act, persons (i) operating a reticulated LPG distribution network; and (ii)retailing LPG transported via such systems, are required to be licenced by ESCOSA.

The *Gas Regulations 1997*, made under the *Gas Act 1997*, specify appropriate safety and technical standards to be applied in relation to LPG distribution networks. There are six separate LPG distribution networks in operation in South Australia supplying gas to c.1900 customers and these networks are owned and operated by two separate operating companies. The licencing provisions of the *Gas Act 1997* are typically applied to natural gas networks but Section 77 of the Act provides ESCOSA with the power to grant an exemption, with the approval of the Minister for Energy, from the requirement of the Act for relevant persons to be licenced. In 2003, these two operating companies were granted an exemption from the obligation to hold a licence to operate their respective LPG distribution networks in South Australia, subject to certain conditions requiring:

- compliance with the technical and safety requirements imposed by the *Gas Act 1997* and the *Gas Regulations 1997*;
- compliance with any requirements in relation to metering of gas supply as advised by ESCOSA from time to time; and
- provision of any information in relation to the exempted operations as advised by ESCOSA from time to time.

An exemption from the obligation to hold a licence means that licence fees are not payable to ESCOSA.

4.2 Safety and Technical Regulation of LPG Networks in South Australia

The Office of the Technical Regulator (OTR), a part of the Department for Transport, Energy and Infrastructure, is responsible under the *Gas Act 1997* for the monitoring and regulation of safety and technical standards with respect to gas network distributors (including the operators of LPG networks) in South Australia. All gas network distributors are required to develop and submit a '*Safety, Reliability, Maintenance and Technical Management Plan*' (SRMTMP) to the OTR. The SRMTMP must provide assurance that distributors will manage and operate the LPG distribution systems so as to minimise as far as practicable:

- the hazards and risks to the safety of the public and consumers arising from the system;
- the hazards and risks of damage to property of the public and consumers arising from the system; and
- the hazards and risks to the safety of the public and consumers arising from interruptions to the conveyance or supply of LPG and the reinstatement of an interrupted LPG supply.

The SRMTMP must comply with requirements set out in the *Gas Regulations 1997* and requirements specified by the OTR including a detailed description of the structure, assets, function and operation of the LPG distribution systems and a Formal Safety Assessment (FSA), together with the specification of systems and procedures to be used by the network operator to ensure that the design, construction, installation, commissioning, operation, metering, maintenance and de-commissioning of each LPG distribution network are adequate for public safety and the safe operation of the LPG network. The OTR is responsible for monitoring compliance with the SRMTMP and undertakes audits to ensure compliance with the SRMTMP and the technical requirements of the *Gas Act 1997*.

4.3 Reporting and Investigation of LPG-related Incidents in South Australia

All LPG (and natural gas) related incidents are required to be reported to the OTR under the *Gas Regulations 1997* and are registered in the 'Technical Regulator Incident Database'. If the OTR considers it appropriate, reported incidents may be subject to follow-up investigation. For any incident caused by the operation or condition of gas infrastructure or a gas installation, a report must be made to the OTR:

- in the case of death resulting from the accident – immediately by telephone;
- in the case of a person requiring medical assistance resulting from the accident – within 1 working day of the accident;
- in the case of property damage of more than \$5,000 resulting from the accident – within 10 working days of the accident; or
- in the case of any injury to person or property or a dangerous situation involving a gas infrastructure pipeline operating above 1050 kPa (10.5 barg) or involving the attendance of a fire brigade – within 1 month of the accident.

4.4 Safety Promotion of LPG in South Australia

There are no explicit legislative requirements for LPG undertakings to carry out LPG safety promotional activities under the *Gas Act 1997* or the *Gas Regulations 1997*, although the promotion of gas safety is carried out at two levels.

Firstly, licence conditions for gas retailers (suppliers) issued by ESCOSA, empowers the OTR to issue written directions to gas retailers to produce and submit a ‘*Customer Safety Awareness Plan*’ (CSAP), which must include details of the retailer’s customer communication plan. The communication plan includes topics ranging from general gas safety information, the gas appliance safety approvals scheme and who to contact in the event of a gas supply shortage.

Secondly, a continuous gas safety promotion for natural gas and LPG was commenced in 2002 by the OTR and is ongoing. The objectives of the continuous safety promotion are to:

- raise the public’s awareness of gas safety issues;
- influence the general public to take positive action on gas safety; and
- promote awareness of the Technical Regulator as the State’s authority on gas safety matters.

Features of the OTR’s gas safety promotional activities include:

- a website (<http://www.technicalregulator.sa.gov.au>) that provides information on the safe use of gas appliances for consumers, gas fitting contractors and workers;
- an annual ‘Gas Consumer Safety Survey’ carried out to gauge domestic gas consumers’ experiences with gas safety, to assess consumer awareness of gas installation and appliance standards and to provide an indication of the level of need for consumer education in this area; and
- technical roadshows and presentations.

5.0 Legislative Proposals

Given the review of the analysis of the gaps set out in Section 2 and the approaches adopted for the regulation of LPG Suppliers and LPG Distribution Network Operators in other jurisdictions internationally, this section outlines the Commission's proposals on the Phase 2 legislative requirements necessary for addressing the three remaining safety gaps, namely: (i) the safety regulation of LPG distribution networks; (ii) LPG appliance related incident reporting in a domestic setting; and (iii) the promotion of LPG safety by the Commission. By way of context, an overview of the legislative powers of the Commission with respect to Natural Gas is set out initially.

5.1 Natural Gas

Under existing legislation the Commission's powers with respect to natural gas safety relate to (i) regulating the activities of natural gas undertakings with respect to safety; (ii) promoting the safety of natural gas customers; (iii) investigation of incidents involving natural gas; and (iv) appointing Gas Safety Officers are defined in Section 9 of the *Electricity Regulation Act 1999*. The *Electricity Regulation Act 1999* also provides natural gas transmission and distribution system operators with the authority to appoint Gas Emergency Officers.

The Commission also has powers to: (i) licence natural gas undertakings 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; and (ii) levy charges on licenced natural gas undertakings are enshrined in Section 16 and Section 22 of the *Gas (Interim) (Regulation) Act 2002* respectively. The 2002 Act also provides that a person cannot construct a downstream natural gas pipeline without the consent of the Commission (by substituting section 39 of the *Gas Act 1976*). The *Gas (Interim) (Regulation) Act 2002 (Criteria for Determination of Consents) Regulations 2002* and the *Gas (Interim) (Regulation) Act 2002 (Criteria for Determination of Applications for Natural Gas Licences) Regulations 2002* set down criteria for the basis on which the Commission must determine an application for a consent or licence.

The Commission's enforcement powers with respect to licences for natural gas undertakings, e.g. (i) shippers & suppliers; and (ii) distribution system operators lie, primarily, in its ability to revoke the relevant licence at 30 days' notice due to failure on the Licensee to comply with determinations, orders and directions made under Sections 24, 25 and 26 of the *Electricity Regulation Act 1999* and under sections 16 and 21 of the *Gas (Interim) (Regulation) Act 2002* or if the Licensee is, has been, or is likely to be in breach of a relevant safety requirement and the Commission is satisfied that, as a result,

the Licensee is no longer a fit and proper person to hold a licence. There are also ‘other’, financial reasons why a licence may be revoked by the Commission.

5.2 Proposed Legislative Requirement to address LPG Gaps

It is proposed by the Commission that in order to provide the Commission with sufficient vires and enforcement powers to address the identified LPG safety gaps the following provisions in primary legislation is required:

- Define LPG undertakings as: (i) LPG suppliers who import LPG from outside of Ireland and/or purchase LPG from refineries within Ireland; and (ii) LPG Distribution Network Operators who own and operate LPG distribution networks through which LPG is conveyed to end use customers who are connected to a LPG distribution network.
- Establish the Commission as a licencing authority for: (i) LPG Suppliers; and (ii) LPG Distribution Network Operators on the basis that a licencing regime is the most appropriate approach to enforce the safety regulation of LPG undertakings.
- Provide the Commission with powers to:
 - Regulate the activities of LPG undertakings, with respect to safety. This will require the establishment of a safety regulatory framework for LPG, preferably by extending the existing natural gas safety regulatory framework for natural gas undertakings to include LPG undertakings, in particular with respect to:
 - “a system for the inspection and testing of all LPG distribution pipelines; and*
 - “procedures for the investigation of any incidents involving LPG which in the opinion of the Commission warrant such investigation”*
 - “procedures relating to the making of a report to the Minister in respect of an investigation of any incidents involving LPG”*
 - Promote the safety of LPG customers and the public generally as respects the supply and distribution of LPG. In carrying out these functions the Commission may require LPG undertakings to regularly advise and provide information to their final customers and the public as respects:

“best practice in relation to the safe use of LPG and on the operation and maintenance of LPG fittings;

the detection and reporting of LPG leaks and other faults in LPG fittings”

This would also include powers for the Commission to direct a LPG undertaking to engage in campaigns promoting LPG safety.

- Consult with the National Standards Authority of Ireland regarding standards and specifications relating to LPG safety
- Appoint a LPG Safety Officer who may enter land to:
 - Inspect LPG pipelines
 - Inspect LPG fittings
 - Carry out tests
 - Take measurements or photographs
 - Require to be provided with document, records, materials or any relevant information
 - Take samples of LPG
 - Issue instructions with respect to evacuation
 - issue instructions to persons to refrain from performing certain acts
 - Search for LPG leaks
 - Interrupt the supply of LPG
- Issue: (i) Improvement Directions; (ii) Improvement Notices; and (iii) Prohibition Notices to LPG undertakings
- Require LPG undertakings to report any LPG-related incidents to the Commission
- Impose charges and levies on LPG undertakings with respect to licence fees

With respect to the licencing of LPG undertakings, there are broadly 2 high level options available.

- Option 1: LPG Suppliers and LPG Distribution Network Operators be separately licenced with no provisions to prevent the same legal entity from holding both a LPG supply and a LPG distribution licence.
- Option 2 - that a single licence for a LPG Undertaking be issued and appropriate licence conditions be included dependant on the activities undertaken i.e. LPG supply only or LPG distribution and supply.

Regardless of which option is chosen, the following licence conditions should be included:

- In the case of LPG Suppliers, appropriate licence conditions for:
 - Taking safety promotional measures' to ensure that customers are aware that any buried installation pipework downstream of the LPG tank must be in a fit condition for the safe supply LPG to the property;
 - Promoting general LPG safety to the customer;
 - Responding to public reported escapes of LPG leaks either outside or inside the property and ensuring that any leaked LPG is safely cleared before leaving site; and
 - Reporting LPG related incidents associated with LPG installation pipework (external and internal to the property) and LPG appliances to the Commission.

- In the case of LPG Distribution Network Operators, appropriate licence conditions for:
 - Developing a LPG Distribution Safety Case in accordance with LPG Safety Case Guidelines to be issued by the Commission. The LPG Distribution Safety Case would include requirements for the risk assessment, design, construction, testing & commissioning and operation & maintenance of the LPG distribution network assets;
 - Promoting general LPG safety to the customer and measures to be taken to avoid third party damage;
 - Responding to reports of third party damages to the distribution network and public reported escapes of LPG, whether outside or inside the property, and ensuring that any leaked LPG is safely cleared before leaving site; and
 - Reporting LPG-related incidents associated with the distribution network to the Commission.

It is the Commission's preliminary view that a single licence for a 'LPG Undertaking' under Option 2 is the preferable approach.

It should be noted that it is not the Commission's intention that any licencing regime for LPG undertakings is used for the purposes of economic or price regulation, but is solely intended for the purposes of ensuring LPG safety.

6.0 Next Steps

The Commission now invites comment on its proposals outlined in this paper. The specific aspects on which the Commission particularly invites comments are:

- a) The proposals for demarcation between Commission and the HSA with respect to lines of responsibility as set out in Sections 2.1 to 2.4;
- b) The Commission's analysis of the safety gaps and proposals to address these specific areas with respect to the Commission itself, LPG suppliers and LPG distribution network operators as set out in Section 2.1 to 2.4;
- c) The appropriateness of the phase 2 legislative proposals set out in Section 5.2.

The closing date for this consultation is March 5th, 2010.

Following a review of the consultation responses and further engagement with the industry, the Commission intend to publish its final recommendations in April 2010.

Appendix A – Glossary of Terms

CER:	Commission for Energy Regulation.
COP:	Code of Practice.
CSAP:	Customer Safety Awareness Plan
ESCOSA:	Essential Services Commission of South Australia
ECV:	Emergency Control Valve
GSUR:	Gas Safety (Installation and Use) Regulations 1998 (UK)
GSMR:	Gas Safety (Management) Regulations 1996 (UK)
GSSB:	Gas Safety Supervisory Body, as designated by the Commission under the 2006 Act.
HSA:	Health and Safety Authority.
LPG:	Liquefied Petroleum Gas.
MoU:	Memorandum of Understanding.
OFGEM:	Office of the Gas and Electricity Markets (UK Regulatory Authority)
OTR:	Office of the Technical Regulator (South Australia)
PE Mains:	Polyethylene mains.
PSR:	Pipelines Safety Regulations 1996 (UK)
RIDDOR:	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
SRMTMP	Safety, Reliability, Maintenance and Technical Management Plan

Appendix B – Sources

The following Acts, regulations, standards and reports have been referenced in this document

Ireland:

Gas Act 1976

Gas (Amendment) Act 1987

Electricity Regulation Act 1999

Gas (Interim) (Regulation) Act 2002 and Associated Regulations

Energy (Miscellaneous Provisions) Act 2006

Dangerous Substances (Storage of LPG) Regulations 1990

I.S. 813 Domestic Gas Installations

I.S. 265 Installation of Gas Service Pipes

I.S. 266 Polyethylene (PE) Pipes and Fittings for Natural Gas, Manufactured Gas and LPG

GB:

Gas Act(s) 1986 and 1995

Pipelines Act 1962

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

Pipeline Safety Regulations 1996

Gas Safety (Management) Regulations 1996

Gas Safety (Installation and Use) Regulations 1998

Provision and Use of Equipment Regulations 1995

Dangerous Substances Explosive Atmospheres Regulations 2002

Caravan Sites and Control of Development Act 1960

IGE/TD/3 Steel and PE Pipelines for Gas Distribution

IGE/TD/4 Gas Services

The ICL Inquiry Report into the Explosion at Grovepark Mills, Maryhill in Glasgow on 11th May 2004 (published July 2009).

South Australia:

Gas Safety Act 1997

Gas Safety Regulations 1997

Regulatory Arrangements for Reticulated LPG Networks, Issues Paper, The Essential Services Commission of South Australia – August 2008

Regulatory Arrangements for Reticulated LPG Networks, Draft Decision, The Essential Services Commission of South Australia – October 2009

Appendix C – Characteristics of Liquefied Petroleum Gas (Technical Note)

Liquefied Petroleum Gas (LPG) is the generic term for hydrocarbon fuel gases with the primary active constituents propane and butane. These constituents are derived from petroleum and can be readily converted to liquid form by the application of moderate pressure and/or refrigeration. LPG is normally supplied in the form of commercial propane.

In liquid form, it occupies a smaller volume than the corresponding volume of gas. At atmospheric temperature and pressure, 1m³ of liquid vaporises to 274m³ of gas. As a liquid at ambient temperature, LPG exerts a pressure equivalent to its vapour pressure (c. 7 barg). It must therefore be stored in a suitable pressure vessel. The compressibility of LPG makes it particularly suitable for bulk storage and transportation. Due to the possibility of its expansion, LPG transported as liquid presents a greater hazard than that transported as vapour.

Vaporised LPG at atmospheric pressure is approximately one-and-a-half to two times heavier than air. Escapes of LPG therefore tend to flow along the ground or the floor and to accumulate at low points such as pits, sumps, drains and basements. Natural gas is lighter than air and therefore dissipates more easily into the atmosphere.

When LPG is released to atmosphere it vaporises and mixes with air. The mixture is flammable at concentrations of between 2% and 10%. It burns most energetically when the mixture is about 4% to 5% in air – i.e. a “stoichiometric mix”. At concentrations below 2% the mixture does not burn as it is too weak to support combustion. At concentrations above 10% it does not burn as the mixture is too rich. By contrast, natural gas is flammable in air at concentrations between 5% and 15% and burns most energetically at a mix of about 9% gas in air.

Because of its greater density and its flammability in air at lower concentrations, LPG presents a greater hazard than natural gas. However, LPG fire and explosion incidents are relatively uncommon in relation to other incidents and where they do occur they mostly relate to LPG in liquid form.

Since LPG, like natural gas, is odourless in its natural state, a stenching agent is added to make it detectable, by persons with a normal sense of smell, at concentrations of one fifth of the lower limit of flammability. The stenching agent is an important safeguard against the risks of fire and asphyxiation which arise when higher concentrations of LPG accumulate in confined spaces. Poorly installed and/or serviced LPG appliances can also result in carbon monoxide (CO) production with potentially lethal consequences.