

## Safety issues in the supply of domestic bulk LPG

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- Annex 1   Review of UK regulations governing health and safety for supply of bulk LPG for domestic use
- Annex 2   Standardisation issues

### Summary

1.     LPG is a hazardous product, which needs to be safely transported, delivered to and stored on customers' premises. The UK LPG industry appears to have a good safety record, which suppliers attribute to the integrated supply model prevalent in the industry, whereby the supplier takes full responsibility not only for the delivery of the LPG but also for the installation of the tank and associated fittings and their on-going maintenance.
  
2.     This appendix examines how the suppliers' approach to safety management is shaped by legal, technical, organisational and cost considerations, and assesses whether certain business practices which have developed in the context of the

integrated supply model are necessary on safety grounds. This has been assessed by considering whether alternative business practices might have been adopted within the existing legal regime and without a negative impact on the safety record of the industry.

3. The integrated supply model has some advantages, such as clear responsibilities and simplicity for the customer, but it results in a number of business practices which may contribute to the cost and inconvenience of switching. Overall, we have concluded that there is no overriding legal obligation to use this model, and it is not the only approach that could be employed under the current safety management framework. In relation to whether each of the core business practices of the integrated supply model are required on safety grounds, we have come to the following conclusions:

(a) **Exclusivity of supply:** this practice helps to satisfy safety requirements under the existing UK legal regime. The practice provides clarity as to whose gas is in the tank and which supplier is responsible for delivering emergency services. Moreover, since the legal regime requires suppliers to satisfy themselves that a tank is safe before delivering LPG, exclusive supply would seem to constitute a more efficient means of complying with the current safety regime than non-exclusive supply.

(b) **Ownership of domestic bulk tanks by suppliers:** the current arrangements, whereby the supplier of domestic bulk LPG generally installs and owns the tanks to which it supplies, are one means of ensuring clarity in the allocation of responsibility for safety. There is opposition by many suppliers to the ownership of tanks by customers, even though the supply of LPG to a relatively small number of customer-owned tanks is not unknown in the industry. If a domestic customer owned a tank and undertook responsibility for ensuring that maintenance and repair of the tank was carried out, the protection afforded by

the existing legal regime would be diminished in comparison with the current arrangements. If, on the other hand, the supplier was responsible for safety activities under contractual arrangements, there would not appear to be a significant difference from the present situation in terms of the *scope and applicability of the regulatory obligations*. The separation of maintenance and repair activities from installation and uplift functions has the potential to reduce the overall integrity of the safety management framework, though there would be ways of addressing these difficulties. Ownership of tanks by a third party, although feasible, would require significant changes to the current safety management framework, and could lead to duplication of safety management costs.

- (c) **Tank uplift.** The widespread practice of uplifting tanks instead of selling them to the incoming supplier is not required on safety grounds: the tanks are broadly similar; key differences due to historically lower levels of standardisation are being addressed and the quality/safety of an acquired installation can be ascertained by reviewing statutory tank safety records and, if required, carrying out a site inspection. There are risks associated with uplifting tanks, though these are normally small and controllable. The transfer of tanks by mutual agreement between suppliers also carries certain risks, but these can also be managed and tank transfer is not inherently unsafe. Overall, we see no reason to prefer tank uplift to tank transfer on safety grounds. The safety management framework could have evolved or been adapted to allow transfer arrangements, on reasonable terms and conditions (including the price of the transferred tank), without compromising safety. In the course of the inquiry, the HSE consistently supported the view that tank uplift on change of supplier cannot be justified on safety grounds and we note that several suppliers have transferred tanks *in situ* on occasion.

(d) **Three month notice period for terminating supply contract:** though required by most suppliers, this is not necessary on safety grounds. The notice period is not fixed at three months either by safety regulations or by codes of practice; coordinating the logistics of tank exchange can be achieved within 14 days in accordance with an LPGA code of practice; and it is not necessary for a customer to use all the gas remaining in the tank, as it can be transferred into the new supplier's LPG tank. In the course of the inquiry, the suppliers accepted that existing notice periods could be significantly reduced.

### **Risks associated with domestic bulk LPG**

4. LPG is a hazardous product with the following characteristics:
  - (a) It is classed as a Dangerous Substance<sup>1</sup> and is highly flammable: the flammability range for propane is 2 to 11 per cent compared to 4.5 to 14.5 per cent for natural gas.
  - (b) Unlike natural gas, propane is 50 per cent heavier than air and will stay close to the ground; propane has a low viscosity, flows with ease and will penetrate any break in an installation. Propane is stored under pressure and, unlike natural gas, the pressure reduction takes place on the customer's premises, thus making bulk LPG installations potentially more hazardous than mains gas delivery.
  - (c) Propane requires more air for adequate combustion than natural gas. Appliance aeration and ventilation requirements are different from those for natural gas, and must be adhered to in order to minimise the risk of incomplete combustion and products of combustion spillage.

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<sup>1</sup>Under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002.

5. The safe delivery, containment and use of this product are paramount to safety. Tank and valve design, quality of installation, regular maintenance, and appropriate emergency response are all necessary to minimise LPG leaks and mitigate associated risks. We have been told that increased risk can derive from:<sup>2</sup>
- (a) Design faults: defective tank welds; faulty threads/couplings; wrong type of paint; faulty valves and capacity gauges;
  - (b) Quality of Installation: pipework and regulators, safe distances from buildings, boundaries, overhead voltage cables etc; ventilation; ease of access;
  - (c) Wear and tear, resulting in the decreased effectiveness of valves (especially pressure relief valves) and the corrosion of the tank;
  - (d) Delivery issues: tank filled beyond maximum capacity; electrostatic between delivery connections and tank; filler valve not properly shut; leak during the delivery process;
  - (e) Emergency procedures: quality of instructions to customers; speed of response to emergency calls; appropriate actions taken on site; and
  - (f) Installation and uplift of tanks: risks of dropping the tank; risks associated with manual handling; transport accidents; risks associated with having to lift the tank over a customer's property; potential appearance of a leak at connection with pipework.
6. Such hazards can translate into serious accidents. For example, exposure to LPG can cause cold burn due to the rapid expansion of the gas upon release; an escape of LPG can be ignited and result in either a jet fire or a pool fire; even more serious is the risk of a BLEVE (Boiling Liquid Expanding Vapour Explosion), which could occur if heat applied to a tank over a period of time led to overpressure within the tank. A BLEVE is usually associated with considerable explosive overpressure, a high level of fragmentation (fragments of tanks flying) and a fireball. Such occurrences are

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<sup>2</sup>The risks described are in no particular order.

fortunately very rare, and no BLEVE in the domestic bulk LPG market has been reported to us.

7. According to [§<], the highest predicted risks are associated with delivery operations and in particular hose failures and valve incompatibilities. However, [§<] quantified risk assessments set out in Table 1 suggest that, despite the hazardous nature of the product they contain, its LPG tanks present an extremely low potential risk compared to other everyday risks of fatality.

TABLE 1 Comparison of everyday risks

	<i>Annual risk per million (approx)</i>
All accidental causes Fire and Flame All Gas related incidents Gas incidents—CO poisoning Gas incidents—fire and explosion [§<] one tonne domestic tank*	$\left( \begin{array}{c} \\ \\ \\ \\ \\ \\ \end{array} \right) \ll$

Source: Report on Safety Issues in the Supply of Domestic LPG by [§<].

\*Based on industry failure rate data (AEGPL—European Liquefied Petroleum Gas Association) and assumes that [§<] has a good standard of design, operation and maintenance.

8. Suppliers told us that the UK LPG industry has an excellent safety record, though the statistical evidence available is not sufficient to reach a definitive view: information on major incidents relating to tanks is reported to the HSE under regulation 6 of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) but there may be underreporting of non-fatal accidents; other records of incidents collected by the Liquefied Petroleum Gas Association (LPGA)<sup>3</sup> relate only to the four largest suppliers (the major suppliers) and there may be some inconsistency in the way incidents are classified. There are no international benchmarking studies.

<sup>3</sup>A voluntary trade association dedicated to safety issues in the UK LPG industry.

9. According to the LPGA records, 17,405 customer accidents, incidents and call-outs relating to bulk LPG installations (domestic, industrial and commercial installations) were reported by the major suppliers in 2004. 51 per cent of those related to leaks, which include customers' internal pipework and appliances, 38 per cent to UPSO/OPSO Valve incidents<sup>4</sup> and 9 per cent to equipment faults. There were 3 cases of fires threatening LPG storage facilities and 11 explosions in 2004. There are significant variations from one year to the next but possibly due to inconsistent reporting rather than a degradation or improvement in safety standards.

TABLE 2 Bulk LPG\* accidents, incidents and call-outs (2004)

	<i>Number of reports</i>
Leaks	8,977
USPO/OPSO Valve Incidents	6,718
Equipment Faults	1,647
Other, of which:	63
Pressure Relief Valve lifting	29
Explosion	11

Source: LPGA.

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Note: Includes domestic, industrial and commercial customers.

## Safety management framework

10. The safety management framework in the UK LPG industry comprises legislation, approved codes of practice (ACoPs) created by the Health and Safety Commission, voluntary codes of practice developed by the LPGA in conjunction with the HSE (LPGA CoPs) and company policies and procedures. This safety management framework is the means by which suppliers address all areas leading to potential risks, such as the design of tank and fittings, tank siting and location, tank installation, tank maintenance, safe filling and emergency response.

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<sup>4</sup>Under Pressure Shut-off/Over Pressure Shut-off valves—shut the gas supply off as a result of a gas run-out or faulty regulator.

## ***Outline of the legal regime***

11. This section deals primarily with the legal regime in Great Britain. However, the equivalent regime in Northern Ireland is broadly identical and references are made to the Northern Irish legislation ('the Northern Ireland Order') where appropriate.<sup>5</sup>
  
12. Many of the statutory provisions affecting the supply of LPG are derived from legislation designed to protect the health and safety of employees and other persons who may be affected by the activities of a commercial undertaking. The *Health and Safety at Work etc Act 1974*<sup>6</sup> (the 1974 Act) imposes in Great Britain a number of general obligations on employers<sup>7</sup> to ensure, so far as is reasonably practicable, the health, safety and welfare at work of their employees, including a requirement to ensure the safe use, handling, storage and transport of substances.<sup>8</sup> Employers (and self-employed persons) are also required to ensure that persons not in their employment who may be affected by the activity of their undertakings are not exposed to risks to their health and safety.<sup>9</sup> In addition, employees have a duty to take reasonable care for the health and safety of themselves and other persons who may be affected by their acts or omissions at work.<sup>10</sup>
  
13. Suppliers, along with all other employers, are under an obligation to comply with the general duties laid down in the 1974 Act (and the Northern Ireland Order). They are required to ensure, so far as is reasonably practicable, the health, safety and welfare of any of their employees engaged in activities at work, which include installing and maintaining bulk LPG tanks and delivering LPG to domestic premises. Suppliers are

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<sup>5</sup>Equivalent provisions applicable in Northern Ireland are contained in the Health and Safety at Work (Northern Ireland) Order 1978 (No. 1039 (NI 9)).

<sup>6</sup>c 37.

<sup>7</sup>The term 'employer' is not defined in the 1974 Act. However, it may be construed by reference to the definition of 'employee', which is defined in section 53 as 'an individual who works under a contract of employment'. A similar definition is contained in section 2 of the Northern Ireland Order.

<sup>8</sup>Section 2 (and article 4 of the Northern Ireland Order). In addition, there is an obligation on manufacturers and suppliers of substances to ensure, so far as is reasonably practicable, that the substance will be safe and without risk to health at all times when it is being used, handled, processed, stored or transported by a person at work (section 6(4)(a) of the 1974 Act and article 7(4)(a) of the Northern Ireland Order).

<sup>9</sup>Section 3 (and article 5 of the Northern Ireland Order).

also required to ensure, so far as is reasonably practicable, that domestic LPG customers are not exposed to risks to their health and safety as a result of such commercial activities. In the event of a breach of these obligations and subsequent prosecution, it is for the accused to prove that it was not reasonably practicable to do more than was done to comply with the duty.<sup>11</sup>

14. The 1974 Act and the Northern Ireland Order confer powers on the Secretary of State (or equivalent Northern Irish authority) to make 'health and safety regulations' for, *inter alia*, securing the health, safety and welfare of persons at work.<sup>12</sup> A number of these regulations affect the activities of suppliers (in addition to the general obligations and duties arising from the 1974 Act). In particular:

(a) the *Management of Health and Safety at Work Regulations 1999*<sup>13</sup> (MHSWR) require employers to carry out risk assessments, in order to identify and implement preventative and protective measures necessary to comply with the 1974 Act and with other health and safety regulations such as the those listed in sub-paragraphs (b), (c) and (d) below. For further details, see section 6 of Annex 1;

(b) the *Gas Safety (Installation and Use) Regulations 1998*<sup>14</sup> (GSIUR) regulate works carried out on bulk LPG tanks and related fittings (including pipework). They contain a number of safeguards to deal with emergency situations such as gas leaks, including a requirement for gas suppliers to do so within 12 hours of being informed. For further details, see section 1 of Annex 1;

(c) the *Pressure Systems Safety Regulations 2000*<sup>15</sup> (PSSR) apply to pressure systems such as bulk LPG tanks and associated pipework which are 'used or

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<sup>10</sup>Section 7 (and article 8 of the Northern Ireland Order).

<sup>11</sup>Section 40 of the 1974 Act and article 37 of the Northern Ireland Order.

<sup>12</sup>Section 15 (and article 17 of the Northern Ireland Order).

<sup>13</sup>SI 1999 No 3242. Equivalent provisions applicable to Northern Ireland are contained in the Management of Health and Safety at Work Regulations (Northern Ireland) 2000 (Statutory Rule 2000 No 388).

<sup>14</sup>SI 1998 No 2451. Equivalent Northern Ireland provisions are contained in the Gas Safety (Installation and Use) Regulations (Northern Ireland) 2004 (Statutory Rule 2004 No. 63).

intended to be used at work'. They regulate certain matters related to tank installation and (for older tanks) design and construction, and require the 'user' of the pressure system to establish the safe operating limits of the tank, ensure that the tank is properly maintained and implement a written scheme of examination ("WSOE"), including periodic inspections (though the provisions of the PSSR may not always ensure a complete history of the tank or pipework). For further details, see section 2 of Annex 1;

- (d) the *Dangerous Substances and Explosive Atmospheres Regulations 2002*<sup>16</sup> (DSEAR) impose duties on employers to eliminate or reduce risk from substances which create a risk to safety by fire, explosion or other similar event. They require employers to carry out risk assessments and to provide suitable information to employees. For further details, see section 4 of Annex 1; and
- (e) the *Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004*<sup>17</sup> (CDGR) regulate the carriage of goods by road and rail and the use of transportable pressure equipment. For further details, see section 5 of Annex 1.

15. Compliance with the specific regulations affecting LPG activities (and with the ACoPs and LPG CoPs) will very often be relevant in determining whether a supplier has taken such action as is 'reasonably practicable' to protect his employees and others. However, such compliance will not necessarily guarantee that all the underlying obligations contained in the 1974 Act (or, as appropriate, the Northern Ireland Order) have been satisfied, and it will be for the suppliers to take a view on how a particular activity may affect the health and safety of employees and other persons affected. [3<] told us that, even if it complies with all provisions of the regulations, it may,

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<sup>15</sup>SI 2000 No 128. Equivalent Northern Ireland provisions are contained in the Pressure Systems Safety Regulations (Northern Ireland) 2004 (Statutory Rule 2004 No. 222).

<sup>16</sup>SI 2002 No 2776. Equivalent provisions applicable to Northern Ireland are contained in the Dangerous Substances and Explosive Atmosphere's Regulations (Northern Ireland) 2003 (DSEAR (NI)), Statutory Rule 2003 No. 152.

<sup>17</sup>SI 1996 No 2095. We understand that equivalent Northern Ireland provisions are due to come into effect in autumn 2005.

following a suitable risk assessment, take the view that there is a risk to its employees by the supply of LPG in a particular situation and that the only measure that can be taken to ensure health and safety is to restrict supply. Another major supplier [X] provided us with examples of practices which it did not consider to be safe, even though another supplier did.

16. Any breach of the general obligations under the 1974 Act (or the Northern Ireland Order) and the health and safety regulations gives rise to an offence.<sup>18</sup> One of the major suppliers [X] submitted that fear of committing a criminal offence (including the personal liability of directors, officers and managers of a company) makes suppliers risk averse in the face of uncertainties about the rules. Decisions by enforcing authorities as to whether to prosecute are taken in accordance with the HSE's Enforcement Policy Statement. (<http://www.hse.gov.uk/pubns/hsc15.pdf>). No prosecution may go ahead unless the prosecutor finds there is sufficient evidence to provide a realistic prospect of conviction, and decides that prosecution would be in the public interest. It is the HSE's stated position that sensible health and safety is about managing risks, and its position on enforcement reflects this.
  
17. Proceedings for an offence may be brought by an inspector appointed by the relevant enforcing agency, which in Great Britain will be the HSE or Local Authorities.<sup>19</sup> In addition, inspectors have the power to issue improvement notices where the relevant statutory provisions are being contravened and prohibition notices where there is a risk of serious personal injury whether or not the relevant statutory provisions are being contravened.<sup>20</sup> The HSE primarily targets those activities that give rise to the

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<sup>18</sup>Section 33 of the 1974 Act (and article 31 of the Northern Ireland Order). These are 'either way' offences which may be heard in the Magistrate's Court (where there is a maximum fine of £20,000 for a breach of duty under the 1974 Act or Northern Ireland Order or to a smaller maximum for breach of a regulation made under the Act) or in the Crown Court (where fines are unlimited).

<sup>19</sup>In Northern Ireland, the enforcement authority will be the Health and Safety Executive for Northern Ireland, the relevant government Department or such other class of person as may be prescribed (Northern Ireland Order, article 20(1)).

<sup>20</sup>Sections 21 and 22 of the 1974 Act and articles 23 and 24 of the Northern Ireland Order.

most serious risks or where the hazards are least well controlled. Small bulk LPG tanks at domestic premises do not currently attract proactive inspection by the enforcing authority.<sup>21</sup> As well as the possibility of prosecution, breach of any of the relevant regulations (though not breach of the main duties in the 1974 Act itself) may in some circumstances result in an action for damages by anyone suffering harm as a result.<sup>22</sup>

18. Although breaches of regulation may give rise to an offence, there is no pre-qualification and registration mechanism for suppliers as can be found in the mains gas industry, no systematic scheme of inspections of bulk domestic installations, and no pro-active enforcement by the HSE or the LPGA. While it is possible, in principle, that some suppliers might operate below minimum safety standards, the CC has not been provided with any concrete evidence to support this view.
  
19. A supplier [redacted] told us that the legislation has been drafted with a focus on business premises, and may not always apply to domestic premises. Given the nature and focus of the 1974 Act, there may be a few aspects of the legal regime which are not easy to apply in the domestic context. For example, LPGA CoP1 indicated at one stage that the PSSR did not apply to domestic bulk LPG tanks, albeit that it recommended that PSSR examinations should take place for such tanks.<sup>23</sup> A consequence of this is that the PSSR may have been applied inconsistently in the domestic sector, which in turn may have resulted in inconsistent maintenance schedules and incomplete tank safety records for domestic tanks. However, all the suppliers we talked to<sup>24</sup> told us that they comply with the PSSR under all circumstances and the HSE pointed out that an implicit requirement of DSEAR 2002

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<sup>21</sup>[redacted]

<sup>22</sup>Section 47(1) and (2) of the 1974 Act.

<sup>23</sup>See note at paragraph 1.3 of LPGA CoP1, which provided that “Whilst vessels for domestic supplies are not currently within the scope of the PSSR it is recommended that similar examination should take place.”

and 1974 Act is the implementation of a system of maintenance and inspection. In any event, the HSE has recently clarified that the PSSR cover supplier-controlled domestic bulk LPG tanks<sup>25</sup> and we understand that the LPGA CoP is due to be revised accordingly. There is general agreement among suppliers that the health and safety regime applies in full to domestic bulk LPG tanks.

20. In addition to health and safety regulations made under the 1974 Act, there are other regulations relevant to the bulk LPG industry which implement EU obligations intended to harmonize product safety standards throughout the EU,<sup>26</sup> most notably:
- (a) the *Pressure Equipment Regulations 1999*<sup>27</sup> (PER), which are relevant to the initial integrity of pressure equipment, rather than its use and ongoing maintenance. They ensure that pressure equipment installed since 1999 satisfies certain relevant essential requirements and benefits from a conformity assessment prior to its supply. Any person installing a tank is required to ensure that it has been manufactured in accordance with recognized standards and is safe for use. Failure to comply with the obligations of the PER is an offence, punishable by way of a fine or imprisonment. For further details, see section 3 of Annex 1; and
  - (b) the *General Product Safety Regulations 2005*<sup>28</sup> (GPSR) which provide that a 'producer' (which, in this context, would seem to include a person supplying bulk LPG) cannot place a 'product' on the market unless it is a 'safe product'.<sup>29</sup> A producer includes the manufacturer of a product and other professionals in the supply chain, insofar as their activities may affect the safe properties of a

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<sup>24</sup>The four major suppliers, five smaller suppliers interviewed by Mott Macdonald (Gauld's Gas, Cheshire Gas, LPG Northern (Direct), Rectory Gas and Summerways Bridge Gas) and ALGED's representatives.

<sup>25</sup>See paragraph 2.23 of Annex 1.

<sup>26</sup>There is a degree of overlap between regulations made under the 1974 Act and those implementing EU obligations. A number of the health and safety regulations outlined above implement EU obligations (eg DSEAR, CDGR) or have been made under both the 1974 Act and the European Communities Act 1972 (eg MHSWR).

<sup>27</sup>SI 1999 No 2001, as amended. These regulations apply to the UK.

<sup>28</sup>S.I. 2005 No 1803. The Regulations, which apply to the UK, replaced S.I. 1994 No 2328 and implement Directive 2001/95/EC. Changes include new enforcement provisions and extending the scope of products.

<sup>29</sup>Regulation 5.

product placed on the market.<sup>30</sup> A 'product' means any product intended for consumers or likely under reasonably foreseeable conditions to be used by consumers, supplied whether for consideration or not in the course of a commercial activity and whether new, used or reconditioned.<sup>31</sup> The concept incorporates a product that is supplied or made available to consumers in the context of providing a service, and could include LPG tanks and accessories and possibly also LPG itself. [X] told us that in order to ensure that it complies with the obligations imposed on it by the GPSR 1994, it is itself generally seeking clarification outside the CC process as to whether LPG is a manufactured product for the purposes of these regulations. The safety of a product is assessed taking into account factors such as its characteristics and instructions for use. Where a product conforms to specific UK regulations laying down health and safety requirements that the product must satisfy in order to be marketed, there is a presumption that the product is safe. In the absence of specific rules, conformity is assessed taking into account codes of good practice in respect of health and safety in the product sector concerned and the state of the art and technology.<sup>32</sup> Failure to comply with the relevant provisions of the GPSR is a 'strict liability' offence, subject to a defence of due diligence.

### ***Codes of practice***

21. The Regulations can be subject to interpretation and the ACoPs are designed to provide practical guidance on specific regulations. If a company is prosecuted for breach of health and safety law, the court will refer to the relevant ACoP when seeking evidence of compliance. Two such codes are of particular relevance to this inquiry: *Safety of Pressure Systems—Pressure Systems Safety Regulations 2000*

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<sup>30</sup>Regulation 2(1).

<sup>31</sup>Regulation 2(1).

<sup>32</sup>Regulation 10.

(L122) and *Safety in the Installation and Use of Gas Systems and Appliances Gas Safety (Installation and Use) Regulations 1998* (L56).

22. The LPGA, in conjunction with the HSE, has been developing additional detailed guidance and codes of practice specifically for the LPG industry since the early 1980s. All companies belonging to the LPGA claim to comply with the LPGA CoPs, whilst ALGED<sup>33</sup> encourages its members to follow them. There is however no guarantee that all companies in the industry follow the LPGA CoPs, due to their voluntary nature.
23. The LPGA CoPs set out the minimum standard for the LPG industry, as illustrated by the Health and Safety Commission's endorsement of LPGA CoP1, Part 1.<sup>34</sup> 'If you follow the advice set out in it you will normally be doing enough to comply with health and safety law in respect of those specific issues on which the CoP gives advice. Similarly, Health and Safety Inspectors seeking to secure compliance with the law may refer to this Guidance as illustrating good practice'.
24. There are over 30 LPGA CoPs, which deal with all aspects of LPG supply, tank design, installation, uplift and maintenance.

### ***Company policies***

25. In addition to the ACoPs and LPGA CoPs, a number of suppliers, including the major suppliers, have developed their own policies which may go beyond strict legal requirements. Some of the suppliers have emphasised that the codes of practice are broadly drafted and allow for differences in interpretation in determining the procedures that need to be put in place. In such cases it is the overriding principles of

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<sup>33</sup>Association of Liquefied Gas and Equipment Distributors, a representative body in the UK LPG industry.

<sup>34</sup>Quote by the Chairman of the Health and Safety Commission (HSC) Advisory Committee on Dangerous Substances, Nick Starling, as reported in the revised edition of LPGA CoP1 (issued February 2004).

the 1974 Act and the associated MHSWR which should be followed. A consequence of this is that each supplier needs to carry out its own risk assessment, which may lead to a different view as to what is an acceptable level of risk in areas where codes of practice do not provide guidance (see paragraph 15 above).

26. Mott Macdonald, technical consultants retained by the CC to provide advice on safety issues relating to the supply of domestic bulk LPG, advised us that the legal regime, complemented by the codes of practice, should be the basis of any comparison of technical compatibility and overall compliance across the industry since together they set the standards which new entrants would be expected to reach (see paragraphs 20 to 26 and 29 of Annex 2 for Mott Macdonald's view on the suppliers' adherence to those standards). In assessing basic standardisation issues, it is right to give priority to the legal regime and codes of practice. Nevertheless, we recognise that in certain areas, company-specific policies are relevant, particularly where there appears to be a lacuna or lack of clarity in the legal regime or codes of practice.

### **The impact of safety management on business practices**

27. The major suppliers' approach to safety management involves an integrated supply model, whereby the supplier takes full responsibility not only for the delivery of the LPG, but also for the installation of the tank and associated fittings and their on-going maintenance. Within this system, the major suppliers tend to sub-contract some of the activities, such as the provision of emergency services out of working hours, engineering services, tank installation, and uplift, although liability and control is largely retained by the supplier.
28. It was argued by a number of suppliers that the good safety record of the industry is due to the stringent safety and maintenance procedures adopted by reputable

suppliers and the heavy investment in safety and maintenance undertaken by such suppliers.

29. The major suppliers have argued that the integrated supply model is the safest operating model, which provides most clarity on roles and responsibilities under the current legal regime. According to the major suppliers, it minimizes risks to safety for the following reasons:
- (a) The more control a supplier has over the ongoing condition and maintenance of the tank the easier it is for it to meet its legal duties as an employer (under the 1974 Act) and as a producer (under the PSR 1994 and Consumer Protection Act 1987);
  - (b) It ensures clarity of responsibility, with a single supplier taking on all the relevant statutory duties and discharging them;
  - (c) It allows for a more efficient response to safety issues: all information is held in one place; if defects, weaknesses or problems are identified, then the solution can be found, engineered and implemented without recourse to third parties; and
  - (d) The coordination of all aspects of supply and safety management reinforces and maximises safety, eg highly trained engineering personnel can consider the whole picture and not merely part of it.
30. One of the major suppliers [redacted] contended that all existing elements of the safety management system were necessary in order to keep risks as low as reasonably practicable and that departure from any such practice would be illegal.<sup>35</sup> It argued that it is best left to the individual suppliers to develop their business in the way they consider best suited to meet their obligations. The major suppliers also argued that any attempt to divorce commercial and safety issues in the analysis of this market

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<sup>35</sup>This conforms to the 'ALARP' principle underlying health and safety policy, whereby the aim is to keep risks "as low as reasonably practicable".

would be erroneous. The provision of a one-stop-shop reduces the inconvenience and costs to customers of a safe supply of bulk LPG.

31. Although we accept that companies have an overall incentive to operate safely, we examined the extent to which, individually, the following components of the integrated supply model are required on safety grounds:
  - (a) Exclusivity of supply;
  - (b) Ownership of the tank by the supplier: our assessment examined suppliers' arguments, using two alternative arrangements: ownership of tanks by domestic customers, and ownership of tanks by a third party; and
  - (c) Uplift of tanks at the end of the contract period: we examined this practice against an alternative arrangement whereby the tank is sold *in situ* to the incoming supplier.
  
32. Although not core to the integrated approach, the common practice of requiring a three month notice period for terminating a supply contract has primarily been justified by suppliers on safety grounds and is related to the alleged need to uplift tanks. A section of this appendix examines whether this period is required on safety grounds.
  
33. We acknowledge that the integrated model may bring benefits in terms of cost and convenience, as well as safety, and—where appropriate—we have taken these considerations into account in our analysis. However, the major suppliers maintained that there was a safety rationale for the business practices outlined above, and this has been the primary focus of our analysis.

## Exclusivity of supply

34. With the exception of a small number of local suppliers, who do not use written contracts<sup>36</sup> (eg [36]), LPG delivery to domestic customers is carried out under an exclusive supply contract. Exclusivity clauses prohibit third parties from filling up their tanks except, in some cases, if they are unable to supply themselves (in which case the other supplier may be acting as agent).

35. The following table shows the extent of exclusive supply among the major suppliers.

TABLE 3 The major suppliers' statistics on the right of customers to source LPG from other suppliers

	<i>Customers free to source from others</i>	<i>Total domestic customers</i>	<i>Proportion of customers free to source from others %</i>
BP	[	36	]
Calor			
Flogas			
Shell <sup>1</sup>			
Total			

Source: Companies.

[36]

36. The major suppliers have argued that exclusive supply is necessary in order to comply with the relevant legislation in a cost-effective manner. In particular, it was argued:

- (a) There is a need to ensure that the tank is safe to fill before delivering and, were a series of suppliers to deliver under non-exclusive contracts, each supplier would be dependent on the integrity of the previous supplier's safety management system unless it carried out a comprehensive risk assessment (at an increased cost) before each delivery. The legislation only provides minimum requirements with no prescription as to how these requirements are met and,

<sup>36</sup>Even those smaller suppliers who do not use written contracts appear generally to supply on a *de facto* exclusive basis.

given that there is no assurance that the supplier's safety management systems are equally effective, there is little scope for 'certification' of tanks as safe to fill under the existing regime. There is also the practical difficulty that safety documentation may not be available for certain aspects of the installation, for example siting of the tank and pipework integrity [redacted].

(b) If supply were not exclusive, every supplier would have to change the emergency notice before delivering to the tank. The tank would contain gas from more than one supplier, which would make it difficult to ascertain which supplier has the obligation to prevent gas escapes: would it be the most recent supplier or the supplier who has made the largest number of deliveries during a specified period?

37. One of the major suppliers [redacted] also argued that inconsistency in LPG quality, resulting in too high a water content could lead to internal corrosion of the tank and operability problems caused by other suppliers' gas. However [redacted], which is consistent with the views expressed by all other suppliers and a major tank maintenance contractor [redacted] that the LPG delivered in the UK typically conforms to the British Standard 4250 and is of consistent quality. We do not believe that claimed inconsistent gas quality can justify exclusive supply to tanks.

#### *Assessment*

38. In principle, the relevant legislation does not require or favour the use of exclusive LPG supply contracts. However, if exclusivity were not the norm, there would be some uncertainty as to which supplier was responsible for dealing with gas escapes under the GSIUR in the absence of arrangements between the different suppliers (see paragraph 1.22 of Annex 1).

39. Moreover, if a customer had gas delivered from a series of suppliers, the safety obligations on each delivery could be more onerous, and there could be duplication of functions. For example, inefficiencies would be likely to result from suppliers' obligation to satisfy themselves that the tank was safe before delivering LPG, and the need to replace the emergency notice each time a new supplier fills the tank, potentially two to three times a year (for further details, see paragraphs 1.21, 2.33, 4.22 and 6.8 of Annex 1).
40. We therefore accept that exclusivity of supply helps to satisfy safety requirements under the current UK legal regime. The practice provides clarity as to whose gas is in the tank and which supplier is responsible for delivering emergency services. In the absence of an approved certification system (such as the system which we understand is currently operated in Germany) and an industry-wide emergency service, it would also seem to constitute a more efficient means of complying with the current safety regime than non-exclusive supply.

### ***Ownership of tank by supplier***

41. Our view, and that of most of the suppliers to whom we spoke (eg [X]), is that there are no *technical* reasons, such as differences between filler valves, or in the characteristics of various tanks, why a supplier needs to own the tanks to which it supplies LPG. However, it was argued by certain suppliers that supplier ownership brought significant safety advantages. In particular, some major suppliers [X] argued that without the control conferred by tank ownership, their ability to comply with the safety regulations, particularly the duty to ensure the product is safely contained, would be diminished. Moreover, the separation of LPG supply from ownership of tanks would increase the number of players involved in the provision of LPG which, it was argued, could lead to duplication of safety functions and increased compliance costs [X], add to the complexity of compliance (for example, through increasing the

number of contractual interfaces involved in supply) and make legal responsibilities for compliance less clear (with the risk of abdication of safety responsibilities) [§].

*CC's analysis of implications of the legal regime for ownership of tanks*

42. If the supplier did not own the bulk LPG tank and was not responsible for maintenance and repair of the tank, the application of the relevant legislation would differ from the present situation as follows:

(a) *GSIUR*: Any commercial entity (including employers or self-employed persons) carrying out safety activities would continue to be subject to the safeguards contained in the *GSIUR*. (In addition, the regulations appear to prohibit domestic customers from undertaking such activities themselves unless they are 'competent'.) However, the supplier has certain obligations placed on him under regulation 37 of the *GSIUR* in respect of gas escapes,<sup>37</sup> rather than the person in charge of safety activities, and difficulties may arise where a tank is defective. Under the regulations, the supplier would be responsible for preventing a gas leak, but would be unable to carry out work on the tank to stop the gas escaping without the permission of the owner of the tank and/or the domestic customer. While, in practice, permission to enter premises and prevent the leak could probably be granted by way of contractual arrangements, some of the major suppliers have suggested that there might be practical difficulties in agreeing and enforcing the necessary obligations and responsibilities ([§]), and it could be difficult to assign criminal liability under such an arrangement ([§]). For further details, see paragraphs 1.10 to 1.12 and 1.16 to 1.20 of Annex 1.

(b) *PSSR*: The obligations to establish and operate within safe operating limits, to maintain the pressure system in good repair and to set up a written scheme for periodic examination of the tank by a competent person attach to the 'user' of

the tank, that is the employer or self-employed person who has control of the operation of the tank. A tank under the full control of a domestic customer (ie where the domestic customer has not contracted a commercial entity to carry out safety activities) will not be covered by these regulations. In addition, there is some doubt as to whether these safeguards would apply where a tank-leasing company or other third party was responsible for maintaining and repairing a tank. In such a situation, it is unclear whether the person responsible for maintenance and repair or the person responsible for LPG delivery would be the user for the purpose of the regulations. For further details, see paragraphs 2.21 to 2.31 of Annex 1.

- (c) *DSEAR*: If the supply and safety activities were separate, two sets of entities would be responsible for complying with the obligations set out in the regulations. However, rather than simply duplicating roles, this could have the effect of reducing the level of overall protection, since the risk assessments and risk reduction measures of the two entities would only relate to activities within their control and would not extend to the actions and omissions of others. It is not clear to what extent this would undermine the operation of the regulations. For further details, see paragraphs 4.16 to 4.21 of Annex 1.
- (d) *MHSWR*: The effectiveness of the risk assessment and preventative and protective measures contemplated under the regulations could be reduced for the same reasons set out in relation to the *DSEAR* above.

43. In addition to these points, [redacted] argued that separation of the supply and safety activities could affect liability under the GPSR. As noted above, failure to comply with the relevant provisions of the GPSR is a 'strict liability' offence, subject to a defence of due diligence. It has been put to us that if someone other than the supplier was responsible for inspecting and maintaining the integrity of the tank and

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<sup>37</sup>Along with the responsible person for the premises.

its accessories, then a due diligence defence based on the supplier having received an assurance from that other person that the tank and equipment was safe would be unlikely to succeed in the absence of its having taken reasonable steps to satisfy itself that the assurance was accurate and reliable before filling the tank. While we acknowledge that such an argument may have some basis in principle, it does not follow that separation of the supply and safety functions would automatically lead to such an outcome.

*Alternative model: ownership by customer*

44. In order to test whether ownership of domestic bulk LPG tanks by suppliers is required on safety grounds, the CC asked suppliers to compare the current ownership situation to two alternative ownership models,<sup>38</sup> namely ownership by customers or ownership by third parties. The former is considered in this section, while the latter is considered in the following section.

45. The major suppliers are strongly opposed to the widespread ownership of tanks by domestic customers, as reflected by the low number of customer-owned tanks which they fill:

TABLE 4 Major suppliers' statistics on tank ownership

	<i>Customers owning tank</i>	<i>Total domestic customers</i>	<i>Proportion of customers owning tank %</i>
BP	[	<	]
Calor			
Flogas			
Shell			
Total			

Source: Companies.

[<]

<sup>38</sup>The various ownership models are hypothetical scenarios used to test the strength of the suppliers' arguments.

46. Smaller suppliers represented by ALGED also have strong reservations about the ownership of tanks by domestic customers: [redacted]<sup>39</sup> Some smaller suppliers<sup>40</sup> are, however, willing to supply to tanks they do not own, provided proof of ownership and test certificates can be provided. Others told us that they would be prepared to sell their tanks to customers at the end of the LPG supply contract.
47. The major suppliers have argued that the existing legal regime would be totally undermined under customer ownership, and that it is an inefficient and ineffective way of managing safety in this industry. They contend that the customers would have to bear higher safety costs, that lower safety standards would result in higher insurance premia [redacted]; and that drivers would be unable to carry out routine checks, as there are many different tanks and fittings on the market. However, as set out in paragraph 41 above, we do not accept that lack of standardisation of tanks is an issue: there are only a limited number of valves and fitting configurations; for some time, tanks have been built to well-recognised specifications : British Standards and codes of practice have been in place in the industry since the 80s; more recent legislation (PER) is increasing the level of standardisation even further; the industry has grown by acquisition and companies already check and maintain tanks from various origins. Even if the driver were not able to carry out checks, we do not believe this would necessarily result in higher maintenance costs, as customers could have the LPG tank inspected annually at the same time as their LPG boiler.
48. The major suppliers have emphasised the health and safety risks inherent in customer ownership. They note, for example, that a customer may fail to perceive the need to replace a tank at the end of its serviceable life or to dispose of the tank when moving to another fuel [redacted], or may fail adequately to insure the tank. Safety checks

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<sup>39</sup>[redacted]

<sup>40</sup>Examples of companies which have stated that they are willing to supply to customer-owned tanks are: [redacted].

before delivery would not be sufficient to ensure that the tank was safe to fill, and ceasing to supply would be its only possible course of action for safety-conscious suppliers (which could lead to a break in supply for customers [3]).

49. It is clear from the summary of the regulations at paragraph 42 above that where a domestic customer owns a tank and is responsible for carrying out the 'safety activities' (maintenance and repair) associated with that tank, the protection afforded by the legislation is diminished, particularly in relation to the PSSR. Moreover, there is a risk that the suppliers will be unable to comply fully with safety obligations in relation to their supply functions. However, none of the obligations currently imposed on suppliers by the legislation outlined above appears to derive from ownership of the tank in itself. Hence, if a customer owned his own tank but arranged for the supplier to be responsible for safety activities under contractual arrangements, there would not appear to be a significant difference from the present situation in terms of the scope and applicability of the regulatory obligations. Separation of maintenance and repair from installation and uplift activities has the potential, in certain circumstances, to reduce the overall integrity of the safety management framework. But we note that some of the major suppliers currently use subcontractors to perform the installation and uplift of its tanks. This suggests that, even if tank installation and removal were the responsibility of a third party, this would not necessarily affect to a material extent the effectiveness of the existing regulatory regime, providing that the supplier was able to carry out due diligence when it took over the safety activities to ensure the tank was of a good quality and had been installed properly (see paragraph 50(a) below). Such an approach is similar to the way the major suppliers currently manage the small number of customer-owned tanks for which they are responsible.

50. In response to the suggestion that this approach could be taken with a larger number of customers, the suppliers have raised a number of practical issues and difficulties which might be expected to result from this approach:
- (a) One of the major suppliers [X] explained that to mitigate risks, full tank history and an inspection would be needed before responsibility for maintenance and supply could be accepted, and that risks would nevertheless be higher than under tank ownership by the supplier. As noted above, while we accept that separation of installation from the safety activities has the potential, in some circumstances, to reduce the overall integrity of the regime, we believe that suitable due diligence of the statutory documents (eg manufacturer's certificate), combined, where necessary, with an inspection and the replacement of certain low cost fittings (eg regulators) if required would mitigate this risk.
  - (b) To ensure that maintenance has been carried out properly, the supplier would need to acquire information from the customer, which would result in increased administration costs [X]. We accept that this may be the case, but believe such costs would be minimal provided there was an adequate history of tank installation and maintenance.
  - (c) Liability could be difficult to establish [X]. For example, the supplier could be held responsible for an accident even if its cause was the poor tank quality or installation. We note, however, that LPG tank manufacturers and installers have clear duties under PSSR, PER and GSIUR.
  - (d) A customer would not be able to swap a tank in need of refurbishment unless he bought a second tank, which could result in tanks being refurbished *in situ* or not at all or the cost of a new tank before the end of the economic life of his first tank [X]. However, given that the main manufacturer of tanks also refurbishes them, we believe that a part exchange scheme could deal with this issue.
  - (e) If the customer owned the tank, there would be a possible lack of clarity as to whose gas is in the tank and who is therefore responsible for delivering

emergency services [X]. We note, however, that a contract of exclusive supply would address this issue.

- (f) Given the practical difficulties described above, it has been argued that such an approach would not be attractive to the majority of customers. While we recognise that some of the practical difficulties raised by the suppliers may be off-putting to customers, there may be significant advantages in tank ownership which, to a degree, might offset these concerns, particularly the ability to switch suppliers more easily.

51. Alternatively, the risks inherent in customer ownership might be addressed by means of a certification system administered by a competent authority. One supplier has argued that test certificates produced under PSSR would not be sufficient to ensure that the overall installation is safe to fill, in particular due to the lack of documentation relating to pipework or regulators [X]. Moreover, some suppliers have argued that a certification system would break down if documentation goes missing (for example if there are multiple changes of house ownership) [X] and that certificates can be forged [X]. We note that such a certification system is in place in Germany and to the best of our knowledge has not resulted in lower safety standards. However, we recognise that such a system could probably not be implemented without changes to the existing legal regime.

52. One supplier [X] also argued that customer-ownership of tanks would have a negative impact on safety innovation, as leaders, [such as [X]] would have a decreased level of influence in driving forward safety issues. We note that the LPGA is the normal forum for discussing and implementing safety innovation at the industry level.

*Alternative model: ownership by 3<sup>rd</sup> party*

53. We asked the suppliers if safety would be necessarily compromised if bulk LPG tanks were owned by one party (which was responsible for safety activities) and LPG supplied by another, exploring whether responsibilities for safety activities could be contractually determined and allocated to either party. A number of issues were raised by suppliers.
54. Two of the major suppliers [X] highlighted the difficulties associated with allocating safety responsibilities by contract. [X] argued that because contracts can easily be breached and can only be enforced by injunction or the payment of damages, and statutory duties cannot be delegated by contract, they represent an inadequate means of enforcement of safety issues. The doctrine of privity of contract would add to this difficulty, since each supplier would contract with the customer and their respective contracts would not be enforceable by the other supplier. [X] highlighted the problems of ensuring the other party had met its contractual duties and identifying who was at fault in case of an accident. In addition, there could be difficulties in providing effective emergency services if the supplier cannot remove the tank from the customer's premises or change fittings without the authorisation of the owner.
55. [X] argued that if a customer had to make contractual arrangements with suitably qualified engineers for the maintenance of the tank, the additional burden could be a disincentive to take up LPG, since the customer would have to deal with two sets of undertakings. We acknowledge that this could make the initial purchasing decision more complicated, though it would make the process of switching supplier easier.
56. A number of major suppliers argued that ownership of the tank by a third party would result in increased costs of managing safety: for example, it was submitted that checks normally carried out by the supplier would need to be replaced by a separate annual safety inspection by the owner of the tank [X]; and that fragmentation of

supply and ownership would lead to increase in insurance premiums, although perhaps only if a major accident occurred [redacted]. We have seen no concrete evidence that insurance premiums would be higher under this scenario and we note that certain suppliers [redacted] use their own funds to meet any legal obligations and do not purchase public liability insurance from third parties.

57. One of the major suppliers [redacted] argued that it would have no means of knowing if a contractor used by the third party to maintain the tank was 'competent' and therefore whether the installation had been maintained adequately. The HSE told us that in the UK evidence of a contractor's competence is easy to ascertain, for example via accreditation by Safety Assessment Federation (SAFED) or by the United Kingdom Accreditation Service (UKAS) which carries out accreditation on behalf of the government.<sup>41</sup>
  
58. Finally, it was argued that it was questionable whether an organisation which could take on the role of an independent tank leasing and maintenance company could be readily identified [redacted]; whether there could be competition to provide such a service, including whether customers would be able to switch between such suppliers; or whether regulation of such activities would be required. We note that tank manufacturers and refurbishment contractors could develop a tank leasing business or that an outgoing supplier could continue to rent the tank to the customer following the switch.
  
59. Although we do not conclude that third party ownership of tanks is necessarily unsafe, we accept that there are valid safety reasons why the LPG industry has not adopted this model, such as the complexity of contractual relationships required to

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<sup>41</sup>See HSE ACoP "Safety of Pressure Systems" which recommends accreditation to BS 45004: 1995 General criteria for operation of the various types of bodies performing inspection for bodies acting as competent persons.

solve legal issues and clarify liability. Moreover, such a model could lead to duplication of safety management costs.

### *Assessment*

60. We accept that the current arrangements, whereby the supplier of domestic bulk LPG generally installs and owns the tanks to which it supplies, are one means of ensuring clarity in the allocation of responsibility for safety.
  
61. If a domestic customer owned a tank and undertook responsibility for ensuring that maintenance and repair of the tank was carried out, the protection afforded by the existing legal regime would be diminished in comparison with supplier ownership. If, on the other hand, the supplier was responsible for safety activities under contractual arrangements, there would not appear to be a significant difference from the present situation in terms of the *scope and applicability of the regulatory obligations*. The separation of maintenance and repair activities from installation and uplift functions has the potential to reduce the overall integrity of the safety management framework, though there would be ways of addressing these difficulties (see paragraph 49 above). Ownership of tanks by a third party (and, by implication, responsibility of such a third party for safety activities), although feasible, would require significant changes to the current safety management framework, and could lead to duplication of safety management costs.

### ***Uplift of tanks***

62. A near-universal practice in the LPG industry is to uplift the LPG tank at the end of a contract, rather than transferring the title of the tank to the succeeding supplier (hereafter referred to as 'tank transfer').

### *Uplift risks*

63. ALGED told us that one of the biggest safety risks in relation to LPG is the removal of the tank.<sup>42</sup> The HSE also commented that tank uplift involves ‘obvious risks’, such as transport accidents or the risk of dropping a tank, albeit such risks can be adequately controlled.<sup>43</sup> The HSE consistently contended in the course of the inquiry that the uplifting of tanks cannot be justified on health and safety grounds and that, although it is unclear whether uplift risks are higher than risks arising from the transfer of tanks *in situ*, on balance it would prefer it if a tank was not uplifted unless it was defective or damaged.<sup>44</sup>
64. Our advisers, Mott Macdonald, were also of the view that uplifting of tanks to change supplier is unnecessary as tanks in service are equivalent, and that uplifting is a hazardous activity which should be undertaken only when necessary.<sup>45</sup>
65. One of the major suppliers [X] also agreed that uplifting is a hazardous activity, but contended that, because of its risk management processes, this activity had a low risk rating. Other major suppliers also pointed out that, unlike risks associated with a break in the link between safety management and supply, the risks associated with tank uplift are clear, identifiable and can therefore be minimised and controlled.
66. Uplift of underground tanks is more difficult and costly, and some suppliers may be more amenable to tank transfer of underground tanks given the gradually increasing number of such installations. For example, Flogas indicated to us that they will negotiate on a case by case basis with their customers whether uplift is the right solution for underground tanks, taking into account all relevant health and safety and commercial considerations.

67. Having reviewed the legal regime described above, we reached the view that the relevant legislation does not require tanks to be uplifted on change of supplier. To the extent that the PSSR applies to domestic bulk LPG tanks, where a tank changes ownership, there is an obligation for the previous owner to pass certain documents on to the new owner such as tank examination reports, though [redacted] commented that the provisions of the PSSR do not provide for the complete history of the tank or pipework to be transferred to the new owner (see paragraph 2.16 of Annex 1).

*Alternative model: transfer in situ*

68. The major suppliers have indicated that they do not transfer the title to their tanks, with the exception of [redacted], which occasionally transfers ownership of the tank when uplifting is particularly difficult, expensive or where a health and safety risk is presented. Another major supplier [redacted] indicated that it had suggested transferring tanks *in situ* in the past but had encountered opposition from other suppliers.<sup>46</sup>

69. The transfer of title is also uncommon among the smaller suppliers, but is generally not opposed as a concept [redacted] and has occasionally been carried out [redacted].

70. There have been many tank transfers over the years in connection with a number of corporate acquisitions by the major suppliers (see paragraphs 11 to 17 of Appendix F). [redacted] did not identify any compatibility or compliance problems associated with the tank transfers. The other major suppliers identified issues relating to small number of specific acquisitions. [redacted] has found a number of installations requiring modification or removal due to differences in standards rather than compatibility issues, and has on one occasion declined to purchase a bulk LPG business due to the poor standard

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<sup>42</sup>[redacted]  
<sup>43</sup>[redacted]  
<sup>44</sup>[redacted]  
<sup>45</sup>[redacted]  
<sup>46</sup>[redacted]

of the installations. [X] found that some tanks required full refurbishment following acquisitions and mentioned that [X] of the customer tank installations purchased from [X] had been unsafely installed, a fact discovered only following a serious incident. [X] found many defective installations when it acquired [X]. Only 44 per cent of the [X] tanks transferred and 30 per cent of the [X] tanks were deemed to be in an acceptable condition.

71. The CC asked the suppliers to consider the safety implications of transferring the tank *in situ* instead of replacing it on change of supplier.
  
72. A number of arguments put forward by some of the suppliers centred on the perceived negative impact of this approach on overall industry safety standards and the concern that a small drop in standards would have long-term cumulative effects:
  - (a) As a tank may have a life of well over 30 years, if tested and maintained on a regular basis, the transfer of the tank on change of supplier increases the chance that a tank remains *in situ* longer and that potentially dangerous work is carried out *in situ*. We note, however, that there is currently very little switching and therefore a very high number of tanks remain *in situ* until their 10- or 20-year test. The transfer of tanks *in situ* on change of suppliers should not impact the uplift of tanks for essential maintenance and refurbishment.
  - (b) Incumbent suppliers might inappropriately cut costs (for example maintenance) if they believed that they were less likely to recover their investment in a tank due to transfer. The implication is that this would lead to lower safety standards. But we regarded this possibility as inconsistent with the major suppliers' arguments that current practices are driven by safety legislation and in particular the regulations under the 1974 Act. As the length of contract and therefore period of tank ownership would remain unknown to the supplier, it should be in its

interests to maintain the same standards in order to ensure the health and safety of its employees.

- (c) Transfer of a tank *in situ* to an incoming supplier may create incentives to drive down safety standards overall, as suppliers with better maintained tanks would find competitors more willing to acquire their tanks. But we find it difficult to see significant scope for new tanks to be targeted by less scrupulous suppliers. Such a strategy would be difficult to implement, as we have been told that customers are difficult to identify at the best of times. The age (and condition) of a tank would also be likely to be reflected in the transfer price: it would not necessarily be more profitable for a better maintained tank to be acquired.
- (d) One of the major suppliers [X] expressed concern that there would be 'exploitative new entry', mainly through the acquisition of a tank at low prices to take into account future testing costs, but with the new supplier then failing to carry out such tests while undercutting the prices of existing suppliers, or exiting the market leaving the customer without a supplier and with an untested tank. It was argued [by [X]] that this had happened in the LPG cylinder market in the 1970s, but suppliers were unable to demonstrate how such a targeted strategy could be pursued effectively in the domestic bulk LPG market. In addition, the new supplier would be subject to safety legislation, and in our view the safety management framework, including the codes of practice, would itself evolve to deal with such issues. The HSE also pointed out that there are other safeguards against unscrupulous suppliers: such a supplier may find it difficult to gain access to the UK safety conscious refineries and would need to run a relatively large scale operation for the strategy described above to be worth pursuing.
- (e) One of the major suppliers [X] argued that the existing system of self-regulation would not be sufficient because of the potentially short-term interest of the supplier in the integrity of the tank installation in a transfer system. More

monitoring and enforcement of companies' legal obligations would be needed, and more prescriptive LPGA CoPs, approved by the Health and Safety Commission, would be required, to ensure a level playing field. In our view, more prescriptive LPGA CoPs is one practical response, albeit not necessarily the only response, the industry might have developed under a tank transfer system to ensure compliance and we are therefore satisfied that safety standards would not necessarily have decreased as a result of tank transfer *in situ*. We also note that tank transfer increases the level of scrutiny of LPG installation by third parties, ie the incoming supplier, and as such may increase the effectiveness of self-regulation.

73. Some suppliers also highlighted potential liability issues associated with tank transfer:

- (a) [redacted] contended that the mere fact of involving more parties in managing a tank in itself introduces a risk due to the increased complexity of the system and the blurring of responsibilities. A system that relies on co-operation with third parties would be 'inherently less safe' than one where safety management is integrated within the sole responsibility of one company.
- (b) One of the major suppliers [redacted] has also argued that if an outgoing supplier transferred a tank to an incoming supplier, the outgoing supplier would become a supplier of pressure systems under PSSR, and that on selling the tank, the outgoing supplier would take on the risk of potential liability either to the buyer or to others in the event of the tank failing in some or other respect and causing injury, loss or damage. We do not consider, however, that the obligations a supplier would face under the PSSR in supplying a second hand tank would be materially different from those it is required to discharge as a supplier of LPG, ie to do what is necessary to ensure that a tank is safe.

(c) It was argued [by [X]] that there would be difficulties establishing liability for a tank that had a number of different owners and uncertainty as to responsibility in the event of accidents, as an outgoing supplier would, by law, retain some liabilities regardless of any warranties agreed as part of the contract of sale. It was also argued that detailed clarification of the roles and responsibilities of all parties would be needed. We do not accept that liability issues under such circumstances would fundamentally differ from the existing situation when a supplier acquires a competitor and its tanks. We also note that, under current legislation, an incoming supplier who took over a tank would be under clear responsibilities to ensure the tank was safe to supply, and that there is no reason why the LPGA could not develop a code of practice dealing with this issue in more detail if needed, as it did in relation to tank exchange.

74. We considered whether the suppliers could have adopted an industry-wide 'must-buy must-sell' agreement (in which both the outgoing and incoming supplier would have been obliged to transfer the tank). Some suppliers argued that under a 'must buy' system for tank transfer (in which an incoming supplier would have to buy the tank of the outgoing supplier) the new supplier would possibly have less direct control over its safety standards and reputation, and it may not be prepared to purchase (and hence to supply LPG) if no specifications were available. It was also argued that it would be incompatible with the overriding safety obligations which the 1974 Act imposes on suppliers and employees. For example, a supplier to a tank nearing the end of its life could have difficulties in discharging its duties under the 1974 Act if the tank had been under the control of a number of different parties.

75. We accept that any tank transfer system would require a certain element of flexibility and to need to allow suppliers to conduct risk assessments on a case-by-case basis. But a tank transfer arrangement would not necessarily require an obligation on an

incoming supplier to buy a tank, an obligation which could be unreasonable depending on the condition of the tank. More important would be a willingness by the outgoing supplier to sell a tank, should the incoming supplier wish to buy it at a reasonable price.

76. Suppliers identified the following practical issues in relation to tank transfer:

- (a) There would be a need to check the provenance of a tank, authenticate its documented history, and check its physical condition, situations, valves and fittings; and there would be difficulties establishing the condition of fittings and pipework in an installed tank. We believe that due to the legal requirements relating to the design, maintenance and records of tanks, the low number of tank and fitting suppliers, the continuing efforts of the LPGA to harmonize tanks and tank fittings and the relative simplicity of a bulk LPG tank,<sup>47</sup> the safety audit of the tank and its fittings is likely to be relatively straightforward. We also find it difficult to reconcile the suppliers' arguments as to the onerous nature of any necessary due diligence process with the rather cursory due diligence of tanks undertaken by some of the suppliers when acquiring competing firms.
- (b) The complete history of a tank, its pipework and all associated fittings may not be available: until recently, suppliers were unsure whether PSSR applied to domestic bulk LPG tanks; regulations and codes of practice have changed over time and there may not be as much information available on older tanks; while PSSR sets out information required to be kept and passed on to the next user of the tank (see paragraph 2.16 of Annex 1 to Appendix D), this may not amount to a complete history of the tank. However the HSE told us that as a result of discussions on PSSR,<sup>48</sup> all domestic bulk LPG tanks owned and filled by suppliers should now comply with PSSR and that a WSOE would provide

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<sup>47</sup>A domestic bulk LPG installation comprises: a pressure vessel and its associated fittings which perform 7 functions; pipework, regulators and under pressure/over pressure shut-off valves and an emergency valve.

virtually all of the information needed to ensure that a tank is safe to operate. Non-destructive testing is another means of ensuring that a tank is safe. We accept that tanks which were installed pre-1989<sup>49</sup> and have not been refurbished since then may be more difficult to assess, and that in a minor number of cases the full history of the tank may not be available, but we note that many bulk tanks were installed in the mid-1980s and are currently in the process of being refurbished (see Annex 2 for more detail on legal requirements and guidance relating to documentation retention).<sup>50</sup>

- (c) One of the major suppliers [S&K] was concerned that the transfer of a tank which is undergoing a full maintenance programme could lead to confusion with regard to the responsibility for testing and any subsequent aspect of safety. We believe that this issue could be addressed contractually or via codes of practice.
- (d) Another of the major suppliers [S&K] identified possible limitations to the tank inspection. In particular, it argued that the interior condition of the tank cannot be inspected on an individual *ad hoc* basis; that if the relief valve adaptor markings are illegible, it may be difficult to judge its compatibility with the relief valve; that it is not possible to check the operability of the float gauge and fixed liquid level gauge; and there would be additional practical difficulties in assessing the quality of an underground tank. We do not believe, however, that such difficulties would be significant for the vast majority of tanks.
- (e) There is currently no regulation requiring specifically the testing of installation pipework and associated fittings or the retention of documentation on these. Until GSIUR 1994, there was no regulation governing the standard of installation of this pipework. Certain suppliers have expressed concerns over the integrity of installation pipework and regulators and the need to test both when a tank is

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<sup>48</sup>see HSE operational circular OC 308/13/Rev, 1 November 2004 version, Appendix 1, paragraph 4. See paragraph 2.23 of Appendix 1.

<sup>49</sup>We are not aware of any regulations specifically relating to bulk LPG tanks prior to the Pressure Systems and Transportable Containers Regulations 1989.

<sup>50</sup>[S&K] estimates that year on year for the next five years, between 10,000 and 20,000 pressure vessels will require examination.

transferred *in situ*. We note that establishing the condition of pipework is an issue in the LPG industry under the current arrangement, and that it is not caused by tank transfer. We do not believe that regulators necessarily need to be tested [see Annex 2 for more details on pipework and regulators].

- (f) One of the major suppliers [X] argued that technical differences between tanks and issues relating to the quality and interchangeability of PRVs and regulators would lead to increases in compliance costs, such as additional training of drivers in operational hazard awareness; the need for increased stocks of replacement parts to deal with emergencies; and difficulties in providing advice to customers on the phone if emergency valves are different. Another of the major suppliers [X] told us that it might not be willing to purchase certain tanks, even if they meet safety standards, for example if the supplier of the tank is not on their approved supplier list. We could not reconcile these views with the fact that suppliers already deal with a large number of tank specifications due to company acquisitions and the evolution of standards over time.<sup>51</sup> We note that emergency valves and regulators tend to be standardised as suppliers need to be able to provide advice to customers on the phone in case of a leak [X] and that, if necessary, emergency valve and regulators could be replaced at a relatively low cost, without the need to uplift the tank.
- (g) One of the major suppliers [X] also argued that difficulties would arise from the fact that transferred tanks would have a different WSOE than one applicable to its own tanks. We note however that WSOEs should be reviewed from time to time, for example to increase the frequency of examinations as the age of the tank increases,<sup>52</sup> and that in principle a WSOE is unique to the tank to which it relates, and so WSOEs may vary to a degree within a particular supplier's tank population.

77. Some of the suppliers argued that the transfer of tanks in the context of acquisitions is fundamentally different from the transfer of tanks *in situ* under consideration, in that tanks currently acquired as part of a going concern are brought within existing safety management systems, involving rigorous and extensive safety checks as well as undertaking remedial verification work as necessary. One supplier [redacted] argued that if necessary such tanks are ring-fenced until deemed safe to be incorporated in the company's safety management system. [redacted] also argued that tank inspections under a tank transfer scheme would need to be more complex than in the context of acquisitions. We note that a transfer of individual tanks may require slightly different processes (for example in relation to the transfer of responsibility for dealing with emergencies).

#### *Assessment*

78. The widespread practice of uplifting tanks instead of selling them to the incoming supplier is not required on safety grounds. There are risks associated with uplifting tanks, though these are normally small and controllable. The transfer of tanks by mutual agreement between suppliers also carries certain risks, but these can also be managed and tank transfer is not inherently unsafe. Overall, we see no reason to prefer tank uplift to tank transfer on safety grounds. The safety management framework could have been adapted to overcome many of the concerns expressed by suppliers, to allow transfer arrangements, on reasonable terms and conditions (including the price of the transferred tank), without compromising safety.

#### ***Three months' notice***

79. In the light of the terms and conditions in the standard form contracts of major and smaller suppliers, it is common practice in the industry to require a three month

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<sup>51</sup>For example, [redacted] drivers are trained in dealing with [redacted] valves even though the normal standard for valve arrangement is now [redacted].

<sup>52</sup>Approved Code of Practice on the Safety of Pressure Systems L122, paragraph 123 to 125.

notice period upon termination of a domestic bulk LPG contract. Of the major suppliers, a noticeable exception to this rule is [redacted]. This notice period is not fixed at three months by either safety regulations or codes of practice. The LPGA CoP provides for 14 days to have the task completed.

80. In addition to the three month notice period, [redacted] stated in its submission that it “aims to uplift the tank within 6 weeks after the contract termination date”,<sup>53</sup> thus increasing the total period between the written notification of contract termination received from the customer and the implementation of the new contract to a potential 4.5 months. [redacted] would uplift the tank 10 to 15 working days after the end of the notice period depending on the amount of gas left in the tank. [redacted] simply mentioned that the tank may be lifted after the end of the notice period so that the customer can run down the gas left in the tank.
81. Among the smaller suppliers which have a contract for the supply of LPG to their customers, various notice periods are applied: [redacted] negotiates with each customer to use up the remaining gas; [redacted] requires one month notice; [redacted] requires 12 weeks notice; [redacted] all require a three month notice period.
82. All of the major suppliers have argued that the notice period is needed for safety reasons, as it is dangerous to transport more than 50 kg of gas and the customer needs to run the gas down. [redacted] originally stated that the three month notice period was needed to coordinate the uplift of the tank and that the notice period was to the customer’s benefit, as it allowed the customer to run down the gas, but it also stated that if the customer was switching to a competing supplier, any remaining gas would be transferred to the new tank. [redacted] subsequently conceded that a one month notice period could be sufficient.

83. Mott Macdonald advised us that there are three methods to run down a tank: customer use; backfilling, usually using a gas compressor; and flaring. Of the three methods, customer run-down is the safest. Mott Macdonald also noted that as most domestic customers are on a 'top-up' arrangement, the supplier should have some understanding of their customers' run-down rate, allowing suppliers to estimate notice periods on a case-by-case basis, rather than imposing a lengthy 'one-size-fits-all' period. In addition, the seasonality in consumption could be taken into account when setting the notice period. Suppliers did not agree that this was possible.
84. Flogas informed us that, when a customer is switching to a different supplier, a three month notice period was not needed, as the gas would be transferred into the new tank. Gas run down is however advisable when a customer is switching to another fuel.
85. In the course of the inquiry, the major suppliers accepted that a three month notice period was not necessary, but argued that 14 days did not provide enough contingency to deal with unforeseen circumstances, such as a shortage of contractors.

#### *Assessment*

86. We do not consider that a three month notice period for changing supplier is required on safety grounds. The notice period is not fixed at three months either by safety regulations or by codes of practice; coordinating the logistics of tank exchange can be achieved within 14 days in accordance with LPGA CoP 26; and it is not necessary for a customer to use all the gas remaining in the tank, as it can be transferred into the new supplier's LPG tank. As noted above, in the course of the inquiry bulk LPG suppliers accepted that existing notice periods could be significantly reduced.

## Review of UK regulations governing health and safety for supply of bulk LPG for domestic use

### 1. Gas Safety (Installation and Use) Regulations 1998

#### Origin

- 1.1 The GSIUR were made by the Secretary of State under powers conferred by the 1974 Act. They amend and consolidate a number of pre-existing gas safety regulations, and are of domestic (rather than EU) origin. They apply to Great Britain, though a set of broadly identical regulations also apply in Northern Ireland.<sup>1</sup>

#### Relevant provisions

##### *Installation, maintenance and removal of tanks and related pipework*

- 1.2 Under the GSIUR, no person may carry out work in relation to a gas fitting or gas storage vessel unless they are 'competent to do so'.<sup>2</sup> Bulk LPG tanks fall within the definition of gas storage vessels (which also includes refillable cylinders), while gas fittings include gas pipework, valves and regulators. While there is no definition of 'work' in relation to gas storage vessels,<sup>3</sup> it is believed that, under the normal meaning of the term, such works would include activities such as installation or reconnection, maintenance, repair, and removal. There is no definition of 'competent' in the GSIUR.
- 1.3 Similarly, another regulation provides that no person shall carry out any work in relation to a gas fitting or gas storage vessel otherwise than in accordance with 'appropriate standards' and in such a way as to prevent danger to any person (again,

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<sup>1</sup>The Gas Safety (Installation and Use) Regulations (Northern Ireland) 2004 (the GSIUR (NI)), which were made under powers conferred by the Northern Ireland Order, contain substantively identical provisions to the GB regulations.

<sup>2</sup>Regulation 3(1). Definitions of gas storage vessels and gas fittings are contained in regulation 2(1).

<sup>3</sup>The definition of works contained in the GSIUR relate only to gas fittings (regulation 2(1)). However, regulation 34(3) modifies this definition to include gas storage vessels for the limited purpose of the requirement to inform the responsible person if a gas appliance is dangerous.

there is no definition of appropriate standards).<sup>4</sup> There are also a number of regulations intended to ensure the safe installation and maintenance of gas fittings and/or gas storage vessels,<sup>5</sup> including restrictions on the siting of storage vessels,<sup>6</sup> a requirement to ensure that gas fittings are of good construction and are appropriate for the gas with which it is to be used<sup>7</sup> and an obligation not to make alterations to any premises where that would adversely affect the safety of gas fittings and gas storage vessels.<sup>8</sup> In addition, there are general obligations not intentionally or recklessly to interfere with a gas storage vessel such that its subsequent use might cause danger, which are imposed on all persons (including the householder).<sup>9</sup>

1.4 The employer of any persons carrying out such work is required to ensure that the duties imposed on such persons are complied with.<sup>10</sup> No employer shall allow any of their employees to carry out works in relation to gas fittings or 'service pipework' (the pipes between the gas storage vessel and the emergency control valve), and no self-employed person shall carry out such works, unless that employer or self-employed person is a member of a class of persons approved in writing by the HSE.<sup>11</sup>

1.5 There are a number of regulations affecting the installation—particularly construction and positioning—and testing of 'installation pipework' (pipework extending from the emergency control valve up to, but not inside, the gas appliances).<sup>12</sup> Most of these

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<sup>4</sup>Regulation 5(3). A list of standards regarded as appropriate by the HSE is included in the Health and Safety Commission (HSC) Approved Code of Practice and Guidance on GSIUR (1998) at paragraph 60 and Appendix 4. This list includes certain of the LPG Codes of Practice and Guidance, including Parts 1–4 of Code 1.

<sup>5</sup>See, in particular, regulations 5 (Materials and workmanship), 6 (General safety precautions), 7 (Protection against damage) and 8 (Existing gas fittings).

<sup>6</sup>Regulations 6(7) and (8).

<sup>7</sup>Regulation 5(1).

<sup>8</sup>Regulation 8(1).

<sup>9</sup>Regulation 6(9)

<sup>10</sup>Regulations 3(2) and 3(6).

<sup>11</sup>Regulation 3(3). The HSE has approved the Council of Registered Gas Installers (CORGI) as the relevant 'class of persons' and all employers and self-employed persons must be registered with CORGI as a consequence. While this approval system does not extend to those persons carrying out works on the main body of gas storage vessels, such persons (or their employers) would need to be approved to work on the connected valves and pipework.

<sup>12</sup>Regulations 18–22 (see also HSC Approved Code of Practice and Guidance on GSIUR, paragraph 48). Individual LPG suppliers may apply a higher standard when arranging for the installation of LPG tanks. For example, [X] told us that for work on LPG installations, the normal practice is for such persons to have an LPG endorsement, which further narrows the pool of suitable contractors.

safeguards do not extend to service pipework<sup>13</sup> (which appears to fall within the definition of a gas fitting and hence to benefit from the protections applying to gas fittings). Although the location of the emergency control valve is important in determining what pipes are subject to the controls on installation pipework, there does not appear to be a consistent approach to the siting of this valve in relation to LPG supply.

- 1.6 To the extent that any person working on a gas fitting or gas storage vessel has reason to suspect that a gas appliance is dangerous, that person is obliged to inform the 'responsible person' (normally the occupier) at the premises concerned and (where different) the owner of the appliance.<sup>14</sup>

### ***Obligation to install a regulator***

- 1.7 The GSIUR requires that no person shall 'cause gas to be supplied from a gas storage vessel...to any service pipework or gas fitting' unless a regulator has been installed to control the nominal operating pressure of the gas and that there is an adequate automatic means for preventing the pipework and gas fittings from being subjected to a pressure different from that for which they were designed.<sup>15</sup> There is some uncertainty as to the meaning of 'cause gas to be supplied' and consequently as to which person is responsible for installing a regulator. The regulator must be provided and fitted before gas is first supplied, but someone other than the installer of the tank could fit it, for example, the person who first opens the valve or connects the

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<sup>13</sup>Though the obligation not to install pipework under the foundations of a building or under the base of a wall or footings unless there are safeguards against movement of those structures applies to both installation and service pipework (regulation 19(5)).

<sup>14</sup>Regulation 34(3).

<sup>15</sup>Regulation 14(2).

pipe to the premises—if different—and possibly also the supplier of LPG).<sup>16</sup> In certain circumstances, the consumer of the gas might also qualify.

### **Meters**

1.8 The GSIUR contains a number of obligations concerning the installation, housing and testing of gas meters,<sup>17</sup> though these are largely irrelevant to domestic bulk LPG (other than in cases of metered estates).

### **Emergency controls**

1.9 The GSIUR provides that the person who enables gas to be supplied for use in any premises for the first time shall ensure there is an appropriately sited emergency control valve to which there is ‘adequate access’.<sup>18</sup> The means of operating the valve should be clearly and permanently marked so as to indicate when the valve is open or shut, along with the procedure to be followed in the event of gas escape.<sup>19</sup> The first and any subsequent suppliers of gas to premises where an emergency control valve is installed are obliged to ensure that the aforementioned notice remains suitably worded or is amended or replaced.

1.10 The regulations also provide that where any gas escapes from any gas storage vessel, pipe or other gas fitting, the ‘supplier’ of gas shall, within 12 hours of being informed of the escape, prevent the gas escaping (whether by cutting off the supply of gas to any premises or otherwise).<sup>20</sup> However, in any proceedings for failure to comply with the aforementioned obligation, it shall be a defence for the supplier of gas to prove that it was not reasonably practicable to prevent the escape of gas

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<sup>16</sup>From hearing with HSE ([§<]). The HSC Approved Code of Practice and Guidance on GSIUR states that an installation should be provided with a regulator (see paragraph 115), but this does not go far in clarifying the issue.

<sup>17</sup>Regulations 12, 13 and 15.

<sup>18</sup>Regulation 9.

<sup>19</sup>[§<] informed us that this notice should contain the number to contact in the case of emergency.

<sup>20</sup>Regulation 37. For the purpose of that regulation, any reference to an escape of gas includes a reference to an escape or emission of carbon monoxide gas resulting from incomplete combustion of gas in a gas fitting, though in such a case the requirements on the supplier are limited to advising that person of the immediate action to be taken to prevent such escape or emission and the need for examination and, where necessary, repair of the fitting by a competent person (regulation 37(8)).

within the 12-hour period, and that he did effectually prevent the escape of gas as soon as it was reasonably practicable. In addition, the supplier is entitled to appoint another person to act on his behalf to prevent the escape of gas supplied by that supplier.

1.11 The definition of a gas ‘supplier’ includes a person who provides a supply of gas to a consumer by means of the filling or refilling of a storage container designed to be filled or refilled with gas at the place where it is connected for use ‘whether or not such container is or remains the property of the supplier’.<sup>21</sup>

1.12 The GSIUR does not appear to confer any rights of entry to premises (unlike the natural gas sector, where Transco has wide powers of entry under separate regulations when dealing with an emergency<sup>22</sup>), though it would be in a householder’s interest to grant entry since there is an obligation on the responsible person for any premises who knows or has reason to suspect that gas is escaping to take all reasonable steps to cause the supply of gas to be shut off.<sup>23</sup> We understand that such rights of entry are normally granted to the LPG supplier under contractual provisions, though there may be a lacuna in relation to metered estates, where the purchaser of the gas differs from the users.<sup>24</sup>

## **Monitoring and enforcement**

1.13 Under the 1974 Act, it is an offence to contravene any health and safety regulation, including the GSIUR. A person guilty of an offence may be liable to a fine.<sup>25</sup> The

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<sup>21</sup>Regulation 2(1).

<sup>22</sup>Gas Safety (Rights of Entry) Regulations 1996 (SI 1996 No 2535).

<sup>23</sup>Regulation 37(2).

<sup>24</sup>[><]

<sup>25</sup>The 1974 Act, section 33(3) (and the Northern Ireland Order, article 31(4)).

GSIUR provides certain exceptions as to liability in cases where the relevant person can show he took all reasonable steps to prevent the contravention.<sup>26</sup>

1.14 The HSE is empowered to exempt any person, or class of person from all or any of the requirements or prohibitions imposed under the GSIUR, providing it is satisfied that the health and safety of persons would not be prejudiced by reason of such exemption.<sup>27</sup>

1.15 Proceedings for an offence under GSIUR may be brought by an inspector appointed by the relevant enforcing authority,<sup>28</sup> which in Great Britain will generally be the HSE in relation to bulk LPG tanks located at domestic premises.<sup>29</sup>

## **Safety rationale for current practices**

### ***Ownership of tank by LPG supplier***

1.16 If the LPG supplier did not own domestic bulk LPG tanks, the question arises whether, and how, the operation of these regulations might differ from the present situation.

1.17 If the tank were owned by a third party tank-leasing entity, the regulations governing installation, maintenance and removal of tanks and related fittings would apply to that company (or to any company to which such activities were subcontracted). Similarly, if an LPG tank was owned by the domestic LPG customer, the regulations would apply to the extent that the customer hired someone to install or maintain the tank,

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<sup>26</sup>Regulation 39.

<sup>27</sup>Regulation 40.

<sup>28</sup>The 1974 Act, section 38.

<sup>29</sup>By virtue of section 18(7) of the 1974 Act and the provisions of the Health and Safety (Enforcing Authority) Regulations 1998 (SI 1998/494). In certain circumstances, enforcement is undertaken by local authorities rather than the HSE. The basis of the division depends on the main activities being carried out at the plant subject to the health and safety regime. Activities carried on at domestic premises fall within the HSE's remit, though activities related to the provision of permanent or temporary residential accommodation (including caravan parks) fall within the remit of Local Authorities. There are separate enforcement authorities in Northern Ireland (see the Northern Ireland Order, article 20(1)).

and the regulations would appear to prohibit the customer himself from carrying out works on the tank unless he was competent to do so.<sup>30</sup>

1.18 In relation to the obligation to install a regulator, it would appear that the person installing the gas storage vessel would normally be expected to ensure that a regulator was in place (though as noted above, the position is not entirely clear). Although the regulations do not specify an ongoing requirement to check the operation of the regulator when supplying LPG, there is a duty on the supplier not to cause gas to be supplied from a gas storage vessel to any service pipework or gas fitting unless there is a regulator installed which controls the nominal operating pressure of the gas. This could be argued to be an ongoing duty. If the regulator is not checked and is defective (not doing the 'controlling'), the supplier could be at fault. This means that LPG suppliers could breach the regulations if they supplied gas to an LPG tank with a defective regulator; but this would turn on the particular facts.

1.19 In relation to emergency controls, it would be for the supplier, rather than the tank owner, to respond and prevent further escape of the gas (although it should be noted that it is for the responsible person for the premises to take reasonable steps to shut off the supply). This provision may give rise to some difficulty where the tank, or one of the fittings on the tank, is defective. To the extent that the LPG supplier is required to deal with escapes, it would need to obtain the permission of the tank owner by means of some kind of contractual arrangement (though [§] suggested that there could be some practical difficulties in agreeing and enforcing the necessary

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<sup>30</sup>This view is supported by the provisions of the HSC Approved Code of Practice and Guidance on GSIUR, paragraph 45. 'It should be noted that a domestic occupier is responsible under civil law for the safety of his premises and is liable in damages in the event that he acts in breach of his statutory duty of care so as to cause injury or damage to those lawfully, and to a more limited extent unlawfully, on his premises' (Occupiers Liability Act 1957 and Occupiers Liability Act 1984). 'A domestic occupier can only avoid liability, where the injury or damage was caused by the negligence of an independent contractor, if he can show he acted reasonably in entrusting the work to an independent contractor and took reasonable steps to satisfy himself both that the contractor was competent and that the work had been done properly' (Occupiers Liability Act 1957, section 2(4)(b)).

obligations and responsibilities). While, in principle, a gas supplier that was unable to enter the premises to prevent the gas escaping would be liable to prosecution, it is a defence for the supplier to prove that it was not reasonably practicable for them effectually to prevent the escape.<sup>31</sup> In such cases, however, it is not clear who would be responsible for dealing with the event, and it could be more difficult to implement potentially the most effective action for preventing the further escape of gas (ie uplift and replacement of the tank once made safe).

1.20 None of the obligations in the GSIUR appear to derive from ownership of the tank per se. On the contrary, certain duties attaching to LPG suppliers are expressed to apply whether or not the tank is owned by the supplier (see paragraph 1.11). Hence, if ownership were to vest in the customer or a third party but the LPG supplier was responsible for maintenance and repair of the tank under contractual arrangements, there would not appear to be any significant difference to the present situation for maintenance and repair in terms of regulatory coverage (other than the fact that it may be difficult to assign criminal liability to any individual or undertaking for failing to prevent gas leaks, for the reasons set out in paragraph 1.19). Responsibility for installation and replacement of the tank would fall to whoever owned the tank, unless the LPG supplier was also responsible for this under contractual arrangement.

### ***Exclusivity of supply***

1.21 In principle, the provisions of the GSIUR do not require or favour the use of exclusive LPG supply contracts. However, where there is a lack of continuity of supply, the safety obligations may be slightly more onerous. For example, as indicated above, every supplier would be obliged to check the suitability of the gas escape notice when it makes its first supply and possibly also on each subsequent delivery.

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<sup>31</sup>Regulation 37(5).

1.22 More importantly, if exclusivity was not the norm, it might be difficult to tell which supplier had the obligation to prevent gas escapes.<sup>32</sup> For example, would the obligation to prevent gas escapes within 12 hours fall on the last supplier of gas, or the supplier that had made most deliveries during a specified period?

### ***Uplift of tank when customer switches to new supplier***

1.23 The GSIUR contain no requirement for tank uplift on change of an LPG supplier, though it does ensure that the removal of the old tank and installation of the new tank is carried out by a competent person to an appropriate standard. There may be some confusion about which supplier is required to prevent gas escaping where a tank is transferred with some gas provided by the previous supplier still inside, though this could be dealt with by way of an agreement between the two suppliers.<sup>33</sup>

1.24 [3<] commented that where a tank is not uplifted and where it may have been subject to a variety of owners, suppliers and maintainers or contractors over the course of its history, it will be difficult to allocate fault, particularly given the long periods over which a tank may remain in place.

### ***Three-month notice period***

1.25 The GSIUR do not lay down any requirement—either directly or indirectly—for a three-month notice period for changing supplier.

## **2. Pressure System Safety Regulations 2000**

### **Origin**

2.1 The PSSR were made by the Secretary of State under powers conferred by the 1974 Act. They re-enact with amendments the Pressure Systems and Transportable Gas

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<sup>32</sup>[3<]

<sup>33</sup>Regulation 37(6) provides that a supplier of gas may appoint another person on his behalf to prevent an escape of gas supplied by that supplier.

Containers Regulations 1989, as amended, and are of domestic origin. They apply to Great Britain, though a set of broadly identical regulations also apply in Northern Ireland.<sup>34</sup>

## **Provisions**

### ***Scope of application***

- 2.2 The PSSR apply to 'pressure systems', which include systems comprising one or more pressure vessels of rigid construction, any associated pipework and protective devices, containing, or liable to contain, a 'relevant fluid', including gas which is at a pressure greater than 0.5 bar above atmospheric pressure.<sup>35</sup> Bulk LPG tanks and their associated fittings fall within this definition.<sup>36</sup>
- 2.3 The PSSR 'apply to or in relation to pressure systems which are used or intended to be used at work'.<sup>37</sup> 'Work' is defined in the 1974 Act as 'work as an employee or as a self-employed person', an employee is 'at work' throughout the time when he or she is in the course of their employment, but not otherwise, and a self-employed person is 'at work' throughout such time as he or she devotes to work as a self-employed person.<sup>38</sup>
- 2.4 References to 'danger' in the PSSR means reasonably foreseeable danger to persons from system failure, but it does not mean danger from the hazardous characteristics of the relevant fluid other than from its pressure.<sup>39</sup> Safeguards against certain other hazardous characteristics of LPG are contained in alternative regulations, such as the DSEAR (see section 4).

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<sup>34</sup>The Pressure Systems Safety Regulations (Northern Ireland) 2004 (the PSSR (NI)), which were made under powers conferred by the Northern Ireland Order, contain substantively identical provisions to the GB regulations.

<sup>35</sup>Regulation 2(1).

<sup>36</sup>The definition of 'pressure system' excludes a pressure receptacle, namely a cylinder, tube, pressure drum, closed cryogenic receptacle or bundle of cylinders. It does not appear that bulk LPG tanks qualify as pressure receptacles.

<sup>37</sup>Regulation 3(2).

<sup>38</sup>Section 52(1) of the 1974 Act.

<sup>39</sup>Regulation 2(1).

## ***Design and construction***

- 2.5 Any person who designs, manufactures, imports or supplies any pressure system or component part intended to be used at work must ensure that the pressure system is properly designed and properly constructed from a suitable material 'to prevent danger', that the system is so designed and constructed that all necessary examinations to prevent danger can be carried out and that, so far as is practicable, the system is provided with protective devices to prevent danger.<sup>40</sup>
- 2.6 The supplier (normally the manufacturer or importer) of a pressure system, and the employer of a person who modifies or repairs such a system, are required to provide sufficient written information concerning its design, construction, operation, modification and/or repair (as appropriate) as may 'reasonably foreseeably' be required to allow compliance with the PSSR.<sup>41</sup>
- 2.7 The manufacturer of a 'pressure vessel' (the term is not defined) is required to mark that vessel with certain specified information, including the manufacturer's name, a serial number, the date of manufacture, and maximum and minimum allowable pressure of the vessel, and it is prohibited to remove or falsify such markings.<sup>42</sup>
- 2.8 The PSSR exempts certain pressure equipment which comes within the scope of the Pressure Equipment Regulations 1999 from most of the obligations described above.<sup>43</sup> LPG tanks placed on the market on or after 29 November 1999 are governed by the PER. However, it is believed that the above provisions apply to older tanks.

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<sup>40</sup>Regulation 4.

<sup>41</sup>Regulation 5(1)–(3).

<sup>42</sup>Regulation 5(4)–(6).

<sup>43</sup>Part II of Schedule 1 to the PSSR, paragraph 1(b), which exempts pressure equipment or assemblies to which regulations 7(1), 8(1), 9(1) and 10 of the PER apply from regulations 4 and 5(1) and (4) of the PSSR.

## ***Installation***

2.9 The employer of a person who installs a pressure system at work shall ensure that nothing about the way in which it is installed gives rise to danger or otherwise impairs the operation of any protective device or inspection facility.<sup>44</sup>

## ***Operational restrictions and obligations on 'users'***

2.10 The 'user' of a pressure system is prohibited from operating the system, or allowing it to be operated, unless he has established the 'safe operating limits' of the system.<sup>45</sup> Safe operating limits means the operating limits (incorporating a suitable margin of safety) beyond which system failure is liable to occur. A user means the employer or self-employed person who has control of the operation of the pressure system.<sup>46</sup>

2.11 The user of a pressure system is required to provide any person operating the system with adequate and suitable instructions for its safe operation and action to be taken in case of any emergency, and must ensure that the system is not operated except in accordance with those instructions.<sup>47</sup> The user is also obliged to ensure that the system is properly maintained in good repair, so as to prevent danger.<sup>48</sup> In addition, the employer of any person who modifies a pressure system at work—which may or may not be the user—is required to ensure that nothing about the way it is modified or repaired gives rise to danger or otherwise impairs the operation of any protective device or inspection facility.<sup>49</sup>

## ***Written scheme of examination***

2.12 The user of a pressure system cannot operate the system or allow it to be operated unless they have a written scheme for the periodic examination by a 'competent

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<sup>44</sup>Regulation 6.

<sup>45</sup>Regulation 7(1).

<sup>46</sup>Regulation 2(1).

<sup>47</sup>Regulation 11.

<sup>48</sup>Regulation 12.

<sup>49</sup>Regulation 13.

person' of the pressure vessel, related pipework and protective devices.<sup>50</sup> The scheme must be drawn up, certified as suitable for the purpose of preventing danger and reviewed at appropriate intervals by a competent person. In addition, the scheme should specify the nature and frequency of examination and any measures necessary to prepare the system for safe examination (other than those it would be reasonable to expect the user to take without specialist advice). There is no definition of 'competent' in the PSSR,<sup>51</sup> and there is consequently scope for variation in its interpretation by LPG suppliers.

2.13 The user of a pressure system is obliged to ensure that system is inspected by a competent person within the intervals specified in the scheme and—when the scheme so provides—before the system is used for the first time.<sup>52</sup> The competent person is required to carry out the examination properly and in accordance with the scheme, and to send a written report to the user within 28 days of completing the examination. Any repairs or modifications to the pressure system, or changes to the established safe operating limits or scheme of examination, must be carried out by a specified date (unless the competent person agrees to a postponement) or else the pressure system cannot be operated thereafter. The user (or one of its employees) may act as the competent person where it is appropriate.

2.14 If the competent person carries out an examination under the scheme and concludes that the pressure system will give rise to 'imminent danger' unless certain action is taken, the competent person is required to submit a written report to the user (unless the user is acting as the competent person) and to send a copy of the report to the

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<sup>50</sup>Regulation 8.

<sup>51</sup>Though 'competent person' is defined as 'a competent individual person (other than an employee) or a competent body of persons corporate or unincorporated', and any reference in the PSSR to a competent person performing a function includes a reference to his performing it through his employees (regulation 2(1)).

<sup>52</sup>Regulation 9. An LPG code of practice specifies examination intervals (CoP1, Appendix 1).

‘enforcing authority’ within 14 days of the examination. The user is prohibited from operating the pressure system until the recommended action has been taken.<sup>53</sup>

2.15 The PSSR exempts certain pressure systems from the regulations on written schemes of examination if the product of the pressure in bar and internal volume in litres of its pressure vessels is in each case less than 250 bar litres.<sup>54</sup> However, we understand that this exemption does not apply to bulk LPG tanks, as these are all above 250 bar litres.

### ***Record keeping***

2.16 The PSSR require the user of a pressure system to keep various information, including the last report of an examination under the scheme, any previous reports which materially assist in assessing whether or not the system is safe to operate or repair, and information concerning the design, construction, examination, operation and maintenance of pressure systems.<sup>55</sup> The user is required to keep this information at the premise where the system is installed or at other premises approved by the enforcing authority.<sup>56</sup> Where the user of a pressure system changes, the previous user is obliged, as soon as is practicable, to give the new user in writing anything kept by him under the PSSR. [3<] commented that the provisions of the PSSR do not provide for the complete history of the tank or pipework to be transferred to the new owner.

### ***Modification of duties where systems supplied by way of lease/hire***

2.17 Duties under certain regulations (ie those described above dealing with the obligations to provide suitable instructions for safe operation, to maintain a system in

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<sup>53</sup>Regulation 10.

<sup>54</sup>Part II of Schedule 1 to the PSSR, paragraph 2(1), which also applies to regulation 5(4).

<sup>55</sup>Regulation 14.

<sup>56</sup>The HSE is not aware of any case where it has given approval under Regulation 14 of PSSR to domestic premises.

good repair, to implement and enforce a written scheme of examination and to keep records) can be passed on by the user to a person supplying an installed system by way of lease or hire, provided that person agrees in writing to be responsible for discharging the duties of the user under those regulations.<sup>57</sup>

## Monitoring and enforcement

2.18 Under the 1974 Act (and the Northern Ireland Order), it is an offence to contravene any health and safety regulation, including the PSSR. A person guilty of an offence may be liable to a fine.<sup>58</sup> The PSSR provides a defence in any proceedings for a contravention of the PSSR for the person charged to prove that the commission of the offence was due to an act or default of another person not being one of his employees and that he took all reasonable precautions and exercised all due diligence to avoid the commission of an offence.<sup>59</sup>

2.19 The HSE is empowered to exempt any person, or class of person from all or any of the requirements or prohibitions imposed under the PSSR, providing it is satisfied that the health and safety of persons would not be prejudiced by reason of such exemption.<sup>60</sup>

2.20 Proceedings for an offence under the PSSR may be brought by an inspector appointed by the relevant enforcing authority,<sup>61</sup> which in Great Britain will generally be the HSE in relation to bulk LPG tanks located at domestic premises.<sup>62</sup>

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<sup>57</sup>PSSR, Schedule 2, paragraph 1.

<sup>58</sup>The 1974 Act, section 33(3) and article 31(4) of the Northern Ireland Order.

<sup>59</sup>Regulation 16 of the PSSR and Regulation 16 of the PSSR (NI). A person relying on such an offence is required to give advance written notice to the prosecutor.

<sup>60</sup>Regulation 17.

<sup>61</sup>The 1974 Act, section 38.

<sup>62</sup>For further details, see footnote 56 above. There are separate enforcement authorities in Northern Ireland (see the Northern Ireland Order, article 20(1)).

## Safety rationale for current practices

### *Ownership of tank by LPG company*

2.21 If the LPG supplier did not own domestic bulk LPG tanks, the question arises whether—and, if so, how—the protection provided by the PSSR would differ from the present situation.

2.22 As discussed above, the PSSR apply to pressure systems used or intended to be used *at work*. Given that deliveries of bulk LPG for domestic use are almost invariably made to domestic premises, it is necessary to consider whether such supply falls within the scope of the PSSR.

2.23 In advice on the application and interpretation of the PSSR, the HSE states as follows:

...the Regulations apply to pressure systems for use or intended for use at work. This excludes installations where all the system is under the full control of the householder, including responsibility for maintenance of the tank. However, normally the LPG company will have control of and be responsible for filling, maintenance and examination of the tank and related filling and isolation valves. As there is use at work, PSSR will apply to the tank installation, but not to the “domestic” pipework, fittings and domestic equipment fed from under the tank and under the control of the householder.<sup>63</sup>

2.24 While we agree with this view, there are at least three alternative scenarios which are not addressed directly by the HSE circular, namely whether some of all of the regulations would apply if:

- (a) the tank was owned by a third party ‘tank-leasing company’;
- (b) the tank was owned by an individual householder, who outsourced maintenance of the tank to one or a series of commercial entities (contractors); or

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<sup>63</sup>HSE operational circular OC 308/13/Rev, 1 November 2004 version, Appendix 1, paragraph 4. [X] The LPG Code of Practice 1 (bulk LPG Storage at Fixed Installations Part 3: 2000, Examination and Inspection) states that vessels for domestic supplies are not currently within the scope of the PSSR (though it recommends that examination similar to commercial/industrial vessels should take place) (CoP1, section 1.3). In addition, the HSC Approved Code of Practice on PSSR (2000) states that the Regulations do not apply to systems installed at domestic premises (see paragraph 219). However, we understand that there are plans to amend the guidance in the light of the HSE’s latest statement.

(c) the tank was owned by an individual householder or third party but maintenance was carried out by the LPG supplier under contractual arrangements.

2.25 To the extent that a *tank-leasing company* or *contractor* was responsible for monitoring, maintaining and repairing a bulk LPG tank, there would appear to be a good argument that it was a pressure system used at work (by analogy with the HSE's argument in relation to LPG suppliers). On this basis, the regulations relating to design, construction and installation (outlined above) would appear to apply where the tank is owned and serviced by a tank-leasing company or contractor.

2.26 A more difficult question relates to whether a tank-leasing company or contractor would qualify as the 'user' of a pressure system. If it was obliged contractually to monitor, maintain and repair the tank, it could be said to be 'in control of the operation of the pressure system'. However, the LPG supplier might also be said to be 'in control of the operation of the pressure system' in relation to its delivery functions.

2.27 Under the scheme of the PSSR, it is not clear whether it is possible to have more than one user. If both the tank-leasing company/contractor and the LPG supplier qualified as users for the purposes of the PSSR, this would give rise to significant duplication of functions, as there would need to be two separate written schemes of examination and two people responsible for ensuring the system is properly maintained. While there is scope for more than one interpretation, the better view would appear to be that there can only be a single 'user' for the purposes of the PSSR.<sup>64</sup>

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<sup>64</sup>This view is supported by the HSC Approved Code of Practice on PSSR, which states that, where more than one employer or self-employed person has an interest in the running of the system, it must be clear to both parties who is responsible as user

2.28 On the assumption that there can only be a single user, it would be necessary to determine which commercial entity exercised a greater degree of control over the pressure system.<sup>65</sup> Where tank-leasing companies or contractors operating under long-term arrangements are required to monitor, maintain and repair the tank, there would seem to be a *reasonable* argument that such entities would exercise a greater degree of control over the tank than an LPG supplier (though this reasoning is somewhat circular given that such functions are obligations that fall on a user rather than the means of identifying a user). In the case of tank-leasing companies, it would be possible for the LPG supplier to pass on any obligations it might have by agreement in writing—as set out in paragraph 2.17—though such an option would not appear to be available where the tank is owned by the domestic customer.

2.29 In cases where the householder employed *a series of contractors on an ad hoc basis* to carry out maintenance and repair work, such a contractor would not appear to qualify as a user for the purposes of the PSSR. In such cases, the PSSR would not apply unless the LPG supplier could reasonably be said to be in control of the operation of the tank.

2.30 In conclusion, if separate entities were responsible for complying with LPG safety and delivery functions, each entity might experience difficulty in complying with the full range of obligations imposed on a user. It would appear that the more functions are split between different entities, the less likely there is to be a single, identifiable

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under the Regulations (see paragraph 53). However, [3<] disputed this interpretation and asserts that it is possible to have different users for different purposes.

<sup>65</sup>The PSSR Approved Code of Practice states that a number of factors will determine who has responsibility as the user, including: who decides when the 'plant' will be turned on or off; who decides who has access to the plant; who is responsible for the controls of the plant; and who maintains and runs the plant on a day to day basis (see paragraph 53).

user and consequently the less likely the safeguards contained in the PSSR would be to apply.<sup>66</sup>

- 2.31 If the householder or a third party owned the tank but the *LPG supplier was contractually responsible* for monitoring, maintaining and repairing the tank, there would be a good argument that the LPG supplier was 'in control of the operation of the pressure system', and hence the obligations on the 'user' under the PSSR would attach to the LPG supplier.

### ***Exclusivity of supply***

- 2.32 To the extent that a commercial entity such as a tank leasing company or contractor was deemed to be a 'user' under the PSSR, then the main obligations under the Regulations would attach to that entity rather than the LPG supplier, and the exclusivity of LPG supply contracts would not be relevant to the safeguards provided by the PSSR. Similarly, if there was not deemed to be a 'user' within the scheme of the regulations, then the nature of the supply contracts would be irrelevant to the overall integrity of the PSSR (though, for the reasons outlined above, the safeguards provided in such circumstances would be likely to be reduced).

- 2.33 In cases where an LPG supplier did not own the tank but was contractually responsible for maintenance and repair, then a lack of continuity of supply of LPG, through non-exclusive contracts, would not seem directly to reduce the integrity of the PSSR legal requirements (provided that only one LPG supplier was responsible for safety activities). However, if successive LPG suppliers took on safety activities through a series of short-term contracts, they would each be required to establish safe operating limits and a written scheme of examination. Although there are

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<sup>66</sup>[3<] stated that it believes that it must comply with the duties on users under the PSSR in order to satisfy its obligations under the 1974 Act and the DSEAR. However, it is not clear that other suppliers would interpret the scope of the regulatory regime in this way.

arrangements under the PSSR whereby the previous user passes on records to the new user, this would not seem to absolve the new user from the responsibility of establishing safe operating limits and a written scheme of examination, and hence there could be significant duplication of resources.

### ***Uplift of tank when customer switches to new supplier***

2.34 The PSSR do not appear directly to regulate uplift of tanks, and provide no safety rationale for uplift on change of an LPG supplier. [8] argued that there is an element of risk in transferring the tank and forgoing uplift since the PSSR do not provide for the complete history of the tanks or pipework to be transferred to a new owner.

### ***Three-month notice period***

2.35 The PSSR do not lay down any express requirement for a three-month notice period. However, to the extent that the regulations require a user to establish safe operating limits and prepare and certify a written scheme of examination prior to operating the pressure system, there may be some practical benefit in having a notice period.

## **3. Pressure Equipment Regulations**

### **Origin**

3.1 The PER were made by the Secretary of State under powers conferred by the European Communities Act 1972. They implement as regards the United Kingdom Council Directive 97/23/EC<sup>67</sup> on the approximation of the laws of the Member States concerning pressure equipment.

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<sup>67</sup>OJ No L181, 9.7.97, p1.

## Provisions

### ***Scope of application***

- 3.2 The PER regulate the initial integrity of 'pressure equipment', comprising 'vessels, piping, safety accessories and pressure accessories'<sup>68</sup> with a maximum allowable pressure greater than 0.5 bar.<sup>69</sup> Bulk LPG tanks fall within this definition.
- 3.3 The PER do not apply to pressure equipment placed on market before 29 November 1999,<sup>70</sup> nor do they apply to equipment covered by the EU directive on simple pressure equipment.<sup>71</sup> We understand that, although the tank itself will come under the simple pressure equipment, the LPG tank installation consisting of the tank and associated valves, pipework, safety devices etc does not, and is covered by PER. The majority of the requirements of PER are placed on the 'responsible person', which is normally the manufacturer or first importers into the EU of the pressure equipment, rather than the person installing the tank.

### ***Regulation of supply of pressure equipment***

- 3.4 There is a general prohibition<sup>72</sup> on placing certain specified pressure equipment on the market (in the European Community) or putting that equipment into service without first complying with a number of requirements. These obligations do not apply equally to all pressure equipment, but only to vessels above a certain size and pressure range, depending on the contents of the vessel. We understand that the PER apply to bulk LPG tanks. To the extent that these regulations do not apply (for example in relation to older tanks), certain provisions of the PSSR concerning the design and construction of tanks apply (see paragraph 2.8).

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<sup>68</sup>Regulation 2(2).

<sup>69</sup>Regulation 6.

<sup>70</sup>Regulation 5.

<sup>71</sup>Directive 87/404/EEC.

<sup>72</sup>Regulation 7.

- 3.5 The requirements laid down in the PER include the following:
- (a) the equipment must satisfy the 'relevant essential requirements';<sup>73</sup>
  - (b) an appropriate conformity assessment must be carried out;
  - (c) a CE marking must be affixed to the equipment;
  - (d) a declaration of conformity must be drawn up by the manufacturer; and
  - (e) the equipment must in fact be safe.
- 3.6 There are also obligations to ensure that vessels placed on the market or put into service are designed and manufactured in accordance with sound engineering practice, accompanied by adequate instructions and marked to permit identification of the manufacturer.<sup>74</sup>
- 3.7 In addition to the above provisions, there is a general prohibition on supply of pressure equipment unless it is safe<sup>75</sup> which would extend to LPG suppliers which install tanks. 'Safe' in relation to pressure equipment means that the equipment when properly installed and maintained and used for its intended purpose is not liable to endanger the health or safety of persons and, where appropriate, domestic animals or property.<sup>76</sup>

### ***Conformity assessment procedures***

- 3.8 For the purpose of conformity assessment, the PER classifies pressure equipment into a number of categories. The applicable procedure varies according to the level

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<sup>73</sup>As set out in Schedule 2 to the PER. These include a general requirement to design, manufacture and (where applicable) equip and install pressure equipment in such a way as to ensure its safety when put into service in accordance with the manufacturer's instructions. There are also a number of more detailed obligations relating to design, manufacturing and materials. The PER incorporate a scheme whereby approval of materials used to make pressure equipment can be obtained (Regulation 17 and Schedule 7).

<sup>74</sup>Regulation 9.

<sup>75</sup>Regulation 10. This is the only obligation which is not on the original manufacturer (or first importer into the EU).

<sup>76</sup>Regulation 2(2).

of hazard, with the more onerous procedures (including external certification) applying to the most hazardous equipment.<sup>77</sup>

- 3.9 There are common elements to each conformity assessment procedure. In particular, each contains a requirement for the manufacturer or importer to keep technical documentation at the disposal of relevant national authorities for inspection purposes for a period of ten years.<sup>78</sup>

### **Monitoring and enforcement**

- 3.10 Under the PER, it is an offence to contravene or fail to comply with the obligations described above.<sup>79</sup> Penalties include fine and, in some cases, imprisonment.<sup>80</sup> However, in any proceedings for such an offence, the PER provides for a defence of due diligence.<sup>81</sup>

- 3.11 In addition to the offence, the enforcement authorities may apply to the courts for an order for the forfeiture of pressure equipment for private use or consumption on the grounds that there has been a contravention of the regulations outlined above.<sup>82</sup>

- 3.12 Although the HSE is responsible in Great Britain<sup>83</sup> for enforcing the application of the PER to pressure equipment used in the workplace, enforcement of the regulations' application for private use is carried out by trading standards authorities. In Northern Ireland, the regulations are enforced by district councils.<sup>84</sup>

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<sup>77</sup>Regulations 12 and 13 and Schedules 3 and 4.

<sup>78</sup>Schedule 4.

<sup>79</sup>Regulation 25.

<sup>80</sup>Regulation 26.

<sup>81</sup>Regulation 27.

<sup>82</sup>Schedule 8, paragraph 4.

<sup>83</sup>Schedule 8, paragraphs 1–3.

<sup>84</sup>Schedule 8, paragraphs 1–3.

3.13 Proceedings for an offence under the PER may be brought by an inspector appointed by the relevant enforcement authority. It is not clear whether there is an active programme of inspection, though the involvement of outside bodies in certain of the conformity assessment procedures should ensure a degree of scrutiny.

### **Safety rationale for current practices**

3.14 The PER are relevant to the initial integrity of pressure equipment, rather than its use and ongoing maintenance.<sup>85</sup> However, to the extent that the PER apply to bulk LPG tanks for domestic use, they will require any person installing the tank to ensure that it has been manufactured in accordance with recognized standards and is safe for use. Any tank not so installed may be subject for an order for forfeiture.

3.15 The integrity of the PER, insofar as they apply to bulk LPG tanks for domestic use, would not seem to be affected if the tanks were owned by the domestic customer or a third party, or if exclusive, long-term contracts were not the norm; neither is there any justification in the PER for tank uplift or the three-month notice period.

## **4. Dangerous Substances and Explosive Atmospheres Regulations 2002**

### **Origin**

4.1 The DSEAR were made by the Secretary of State under powers conferred by the 1974 Act. They implement as regards Great Britain Council Directive 98/24/EC<sup>86</sup> on the protection of the health and safety of workers from the risks related to chemical agents at work, so far as that Directive relates to safety, and Council Directive 99/92/EC<sup>87</sup> on minimum requirements for improving the safety and health protection

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<sup>85</sup>[<]

<sup>86</sup>OJ No L131, 5.9.98, p11.

<sup>87</sup>OJ No L23, 28.1.00, p57.

of workers potentially at risk from explosive atmospheres. A set of broadly identical regulations also apply in Northern Ireland.<sup>88</sup>

## Provisions

### ***Duty to eliminate or reduce risk from dangerous substances***

4.2 The DSEAR require every employer and self-employed person to ensure that risk to a person's safety arising from the hazardous properties of a dangerous substance in connection with work is either eliminated or reduced so far as is reasonably practicable.<sup>89</sup> The duty on the employer applies in respect of his employees,<sup>90</sup> but also extends to any other person who may be affected by the work carried on by the employer.<sup>91</sup>

4.3 A dangerous substance includes a substance which, because of its physico-chemical or chemical properties and the way it is used or present at the workplace, creates a risk of a person's safety being affected by a fire, explosion or other similar event. It appears that LPG is a dangerous substance for the purposes of the DSEAR, and the HSE's view is that it is covered by the regulations.<sup>92</sup>

4.4 Where it is not reasonably practicable to eliminate risk, an employer is required to apply measures to control risk and to mitigate the detrimental effects of the dangerous substance, so far as is reasonably practicable. Such measures—which must be consistent with the risk assessment carried out by the employer (see below)—include the avoidance or minimizing of the release of a dangerous substance, and ensuring that any release of a dangerous substance is suitably collected, safely

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<sup>88</sup>The Dangerous Substances and Explosive Atmosphere's Regulations (Northern Ireland) 2003 (DSEAR (NI)), which were made under powers conferred by the Northern Ireland Order, contain substantively identical provisions to the Great Britain regulations.

<sup>89</sup>Regulation 6. See also the definition of 'risk' in regulation 2.

<sup>90</sup>The DSEAR apply to a self-employed person as they apply to an employer and an employee and as if that self-employed person were both an employer and an employee (regulation 4(2)).

<sup>91</sup>Regulation 4(1) (though there are some limited exceptions in relation to some employee-specific protections).

<sup>92</sup>[><] and [><].

contained, removed to a safe place or otherwise rendered safe. In addition, the employer is obliged to arrange for the safe handling, storage and transport of dangerous substances. Certain general safety measures are specified in the DSEAR,<sup>93</sup> including incorporating a means for manual override for shutting down equipment.

- 4.5 Employers are required to make arrangements to deal with accidents, incidents and emergencies related to the presence of a dangerous substance at the workplace, including providing appropriate first aid facilities, making available information on emergency arrangements, and establishing suitable warning systems and escape facilities.<sup>94</sup> 'Workplace' means any premises or part of premises used for or in connection with work, and includes any place within the premises to which an employee has access while at work and any road used as a means of access or egress from that place of work except a public road.<sup>95</sup> On this basis, domestic premises to which LPG is delivered would fall within the definition of 'workplace'.

### ***Duty to carry out risk assessment***

- 4.6 Where a dangerous substance is present at the workplace, the employer must make a 'suitable and sufficient assessment of the risk to his employees' (and, by implication, other persons affected by the work carried on by the employer).<sup>96</sup> The risk assessment should include consideration of the following:

- the hazardous properties of the dangerous substance;
- the work processes used;
- the amount of substance involved;

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<sup>93</sup>Regulation 6(8) and Schedule 1 to the DSEAR.

<sup>94</sup>Regulation 8.

<sup>95</sup>Regulation 2. The equivalent regulation in the DSEAR (NI) refers only to a 'road', rather than a 'public road'.

<sup>96</sup>Regulation 5.

- the arrangements for the safe handling, storage and transport of dangerous substances;
- activities such as maintenance where there is the potential for a high level of risk;
- the likelihood that an explosive atmosphere will occur;
- the likelihood that ignition sources will be present; and
- the scale of the anticipated effects of a fire or explosion.

4.7 The risk assessment must be reviewed regularly and, where necessary, updated. In relation to employers employing five or more employees, there are additional obligations to record significant findings of the risk assessment including any measures that have been or will be taken by the employer pursuant to the DSEAR. No new activity involving a dangerous substance can commence until an assessment has been made and the measures required by the DSEAR have been implemented.

4.8 In addition to the obligation to carry out a risk assessment, the DSEAR require employers to classify places at the workplace where an explosive atmosphere may occur into hazardous or non-hazardous places, and to sub-classify hazardous places into zones of varying risk.<sup>97</sup> The types of newly introduced equipment that can be used in the different zones vary depending on the degree of risk involved.<sup>98</sup> However, gas fittings within the meaning of the GSIUR located in domestic premises are exempt from this classification scheme.<sup>99</sup>

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<sup>97</sup>Regulation 7(1) and Schedule 2. However, in the case of a workplace which has been in use on or before 30 June 2003, employers are not required to comply with regulation 7 until 30 June 2006 (see transitional provisions at regulation 17(2)).

<sup>98</sup>Regulation 7(2) and schedule 3.

<sup>99</sup>Regulation 3(2)(c).

### ***Duty to provide information and instruction***

- 4.9 Where a dangerous substance is present at the workplace, the employer is required to provide his employees with suitable and sufficient information, instruction and training on the appropriate precautions and actions to safeguard himself, other employees and any person affected by the work carried on by the employer.<sup>100</sup>
- 4.10 There is an obligation to ensure that the containers and pipes used at work for dangerous substances are clearly labelled to identify their contents, the nature of those contents and any associated hazards.<sup>101</sup> In principle, this obligation would seem to extend to marking bulk LPG tanks.

### ***Duty of coordination***

- 4.11 Where two or more employers share the same workplace (whether on a temporary or a permanent basis) where an explosive atmosphere may occur, the employer 'responsible for the workplace' is required to coordinate the implementation of all the measures required by the DSEAR to be taken to protect employees (and other persons) from any risk from the explosive atmosphere.<sup>102</sup>
- 4.12 There is no definition of 'responsible for the workplace' contained in the DSEAR. This obligation does not apply in relation to gas fittings within the meaning of the GSIUR,<sup>103</sup> and does not apply until 30 June 2006 to a workplace which is or has been in use before 30 June 2003.<sup>104</sup>

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<sup>100</sup>Regulation 9.

<sup>101</sup>Regulation 10. There are certain exceptions to this requirement where Regulations listed in Schedule 5 apply, but it does not appear that any of the other Regulations listed would apply to bulk LPG tanks or associated piping.

<sup>102</sup>Regulation 11.

<sup>103</sup>Regulation 3(2)(c).

<sup>104</sup>Regulation 17(2).

## Monitoring and enforcement

- 4.13 Under the 1974 Act (and the Northern Ireland Order), it is an offence to contravene any health and safety regulation, including the DSEAR. A person guilty of an offence may be liable to a fine.<sup>105</sup>
- 4.14 The HSE (and in Northern Ireland the Health and Safety Executive of Northern Ireland) is empowered to exempt any person, or class of person, or any dangerous substance from all or any of the requirements or prohibitions imposed under the DSEAR, providing it is satisfied that the health and safety of persons would not be prejudiced and that the exemption will be compatible with the requirements of the EU Directives implemented by the DSEAR.<sup>106</sup>
- 4.15 Proceedings for an offence under the DSEAR may be brought by an inspector appointed by the relevant enforcing authority,<sup>107</sup> which in Great Britain will generally be the HSE in relation to bulk LPG tanks located at domestic premises.<sup>108</sup>

## Safety rationale for current practices

### *Ownership of tank by LPG company*

- 4.16 If the LPG supplier did not own domestic bulk LPG tanks, and was not responsible for the maintenance of such tanks, the question arises whether—and, if so, how—the protection provided by the DSEAR would be differ from the present situation.
- 4.17 In principle, the DSEAR may be relevant to a number of activities related to the supply of bulk LPG for domestic use. The regulations will clearly apply to LPG

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<sup>105</sup>Section 33(3) of the 1974 Act and section 31(4) of the Northern Ireland Order. In principle, imprisonment may also be available where an explosive substance might be used in a certain way which contravenes the DSEAR (section 33(4)(c) of the 1974 Act), but this is unlikely to occur in practice.

<sup>106</sup>Regulation 13.

<sup>107</sup>The 1974 Act, section 38 (and the Northern Ireland Order, article 35).

<sup>108</sup>For further details, see footnote 56 above. We understand that Petroleum Licensing Authorities (which are 'local authorities') have a limited enforcement role in relation to DSEAR. There are separate enforcement authorities in Northern Ireland (see the Northern Ireland Order, article 20(1)).

delivery by an LPG supplier to the domestic customer. They would also apply to other work activities which give rise to the risk of a hazardous event involving LPG—such as a gas explosion or gas leak—including maintenance, repair and uplift of the tank.<sup>109</sup> However, installation of the tank prior to the introduction of any gas would not appear to be a regulated activity under the DSEAR (other than the possibility of dangerous substances involved, for example, in the welding process).

4.18 The LPG suppliers will continue to be bound by the DSEAR in relation to their LPG supply activities and any necessary tank uplift. Hence, they will be under a duty to reduce risk arising from the hazardous properties of LPG when making deliveries and uplifting tanks, and to carry out a risk assessment in relation to these activities. Likewise, any commercial enterprise which becomes responsible for tank safety (such as a tank-leasing company or a tank maintenance company) will be under similar responsibilities in relation to those activities.

4.19 It is not clear whether the separation of LPG delivery and safety activities would lead to any lessening of the protections provided under the DSEAR. It has been argued that if responsibility for safety were no longer in the hands of the LPG suppliers, the risk assessment would have to take into account that the installation was no longer under their control and the measures that could be taken to minimize the risk attaching to the tank infrastructure would be limited because the continued safety of the tank would depend on the actions or omissions of a third party.<sup>110</sup>

4.20 In summary, there is a possibility that if tank ownership was not in the hands of the LPG supplier, and a different commercial entity was responsible for maintenance and repair of the tank, then the degree of protection provided by DSEAR would be

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<sup>109</sup>The HSE has confirmed that the DSEAR apply to the uplift of tanks, as well as to the filling of tanks ([§<]).

<sup>110</sup>[§<]

compromised. However, in the absence of details as to the nature and scope of risk assessments and risk reducing measures carried out under the current regime, it is difficult to assess the degree of risk with any certainty.

- 4.21 To the extent that the domestic customer or a third party owned the tank but the LPG supplier was contractually responsible for maintaining and repairing the tank (and under such contractual arrangements no other entity was entitled to work on or interfere with the tank), there would appear to be no difference to the current situation in terms of the degree of risk, providing the LPG supplier had carried out a suitable assessment of the tank when taking on responsibility for the safety activities.

### ***Exclusivity of supply***

- 4.22 Where there is a lack of continuity of supply of LPG, through non-exclusive supply contracts, there is likely to be some duplication of resources, as each supplier would be required to carry out their own risk assessment at the same set of premises.

### ***Uplift of tank when customer switches to a new supplier***

- 4.23 Although the DSEAR apply to the uplift of tanks which still contain LPG, they do not provide any safety rationale for uplift on change of an LPG supplier.

### ***Three-month notice period***

- 4.24 The DSEAR do not lay down any express requirement for a three-month notice period. However, to the extent that the regulations require an LPG supplier to carry out a risk assessment, there may be some practical advantage in having a notice period.

## 5. Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004

### Origin

5.1 The CDGR were made by the Secretary of State under powers conferred by the 1974 Act. They implement as regards Great Britain a number of EU directives concerning the carriage of goods by road and rail and the use of transportable pressure equipment,<sup>111</sup> and also make certain other provisions. We understand that responsibility for the CDGR has been transferred from the HSE to the Department of Transport. As yet, no implementation has been effected in Northern Ireland, though we understand that equivalent Northern Ireland regulations are due to come into effect in the autumn 2005.

### Provisions

5.2 The CDGR apply certain requirements and prohibitions in relation to the carriage of goods by road, which are enshrined in the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). These relate to matters such as the training of persons involved in the carriage of dangerous goods, labelling of consignments, quality of the equipment used and reporting of accidents and incidents. There are certain obligations on carriers relating to the unloading and handling of dangerous goods,<sup>112</sup> though it is not clear to what extent these extend beyond the delivery vehicle to the bulk LPG tank and the wider site. While there does not appear to be any *express* obligation requiring the LPG supplier to ensure the bulk LPG tank is safe prior to delivery, the point is not entirely clear.<sup>113</sup>

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<sup>111</sup>Council Directive 94/55/EC (OJ No L319, 12.12.94, p.7) on the approximation of the laws of Member States with regard to the transport of dangerous goods by road, as amended; Council Directive 96/49/EC (OJ No L235, 17.9.96, p.25) on the approximation of the laws of Member States with regard to the transport of dangerous goods by rail, as amended; and Council Directive 1999/36/EC (OJ No L319, 12.12.94, p.7) concerning transportable pressure equipment.

<sup>112</sup>Regulation 23.

<sup>113</sup>[X] asserted that the process of carriage continues up to the point of delivery and is not complete until the LPG is discharged into the domestic tank. Accordingly, it argues that the general safety measure contained in the ADR appears to

5.3 The CDGR also impose certain requirements on transportable pressure equipment, similar to those contained in the PER. They are unlikely to apply to the use of bulk domestic LPG tanks, though there is an exemption for carriage of a storage tank when it is 'nominally empty'.<sup>114</sup> This would exempt an LPG tank that was moved to a new location, provided it had been emptied as far as possible before movement.

## **6. Management of Health and Safety at Work Regulations 1999 (MHSWR)**

### **Origin**

6.1 The MHSWR were made by the Secretary of State under powers conferred by the 1974 Act and the European Communities Act 1972. They re-enact with amendments the Management of Health and Safety at Work Regulations 1992 and give effect in Great Britain to certain provisions of Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work. A set of broadly identical regulations also apply in Northern Ireland.<sup>115</sup>

### **Provisions**

6.2 The MHSWR require employers (and self-employed persons) to carry out a 'suitable and sufficient' assessment of the risks to the health and safety of their employees while at work and to other persons affected by the conduct of their undertakings.<sup>116</sup> The assessment of risks is to enable the employer (and self-employed) to identify the measure he needs to take to comply with the requirements and prohibitions imposed on him by the 'relevant statutory provisions',<sup>117</sup> which include the provisions of Part 1 of the 1974 Act and any health and safety regulations made under the 1974 Act such

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place a duty on LPG suppliers to take reasonable steps to satisfy themselves that the tank is indeed safe before discharging the load.

<sup>114</sup>Regulation 5(14).

<sup>115</sup>The Management of Health and Safety at Work Regulations (Northern Ireland) 2000, which were made were made by the Department of Enterprise, Trade and Investment under powers conferred by the Northern Ireland Order and the European Communities Act 1972.

<sup>116</sup>Regulation 3(1). There is also an obligation to review the assessment where there is reason to suspect there has been a change of circumstances (regulation 3(3)) and to record significant findings where an employer employs five or more employees (regulation 3(6)).

<sup>117</sup>As defined in section 53 of the 1974 Act.

as the GSIUR, PSSR and DSEAR. Similar provisions apply under the Northern Ireland Order.<sup>118</sup>

6.3 An employer is required to make and give effect to such arrangements as are appropriate (having regard to the nature of their activities and the size of their undertaking)<sup>119</sup> for the effective planning, organization, control, monitoring and review of the 'preventative and protective measures' they need to take in order to comply with 'relevant statutory provisions'.

6.4 An employer is required to appoint one or more competent persons to assist them in undertaking the measures they need to take to comply with the relevant statutory provisions.<sup>120</sup> In addition, the employer must establish and give effect to appropriate procedures to be followed in the event of serious and imminent danger to persons at work in their undertaking and nominate a sufficient number of competent persons to implement those procedures insofar as they relate to evacuation from the premises.<sup>121</sup>

6.5 The employer should ensure that his employees are provided with comprehensible and relevant information on the risks to their health and safety identified by the assessment, the preventative and protective measures and the procedures to be followed in the event of serious or imminent danger and for danger areas.<sup>122</sup> In entrusting tasks to his employees, an employer must take account of their capabilities as regards health and safety.<sup>123</sup> Employees are under reciprocal duties

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<sup>118</sup>The Management of Health and Safety at Work Regulations (Northern Ireland) Order 2000 (NHSWR (NI)).

<sup>119</sup>Regulation 5(1).

<sup>120</sup>Regulation 7.

<sup>121</sup>Regulation 8.

<sup>122</sup>Regulation 10.

<sup>123</sup>Regulation 13.

to follow training and instructions provided by the employer in compliance with requirement imposed by the relevant statutory provisions.<sup>124</sup>

## **Enforcement**

6.6 Under the 1974 Act (and the Northern Ireland Order), it is an offence to contravene any health and safety regulation, including the MHSWR (or equivalent Northern Ireland regulations). A person guilty of an offence may be liable to a fine.<sup>125</sup> Unlike certain other health and safety regulations, there does not appear to be an express exception as to liability where the employer can show he took all reasonable steps to prevent the contravention.<sup>126</sup> Instead, the regulations provide that an employer will not have a defence in any criminal proceedings for contravention of any relevant statutory provision by reason of any act or default of his employees or any competent person appointed.<sup>127</sup>

6.7 Proceedings for an offence under MHSWR may be brought by an inspector appointed by the relevant enforcing authority,<sup>128</sup> which in Great Britain will generally be the HSE in relation to bulk LPG tanks located at domestic premises.<sup>129</sup>

## **Safety rationale for current practices**

6.8 As in the case of the DSEAR (see paragraphs 4.19 and 4.20), there is a possibility that if tank ownership was not in the hands of the LPG supplier, and a different commercial entity was responsible for maintenance and repair of the tank, then the degree of protection afforded by the risk assessment described above would be

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<sup>124</sup>Regulation 14.

<sup>125</sup>The 1974 Act, section 33(3) (and the Northern Ireland Order, article 31(4)). Regulation 28 specifies that the MHSWR shall, to the extent that they would not otherwise do so, have the effect as if they were health and safety regulations within the meaning of Part I of the 1974 Act.

<sup>126</sup>Though the 1974 Act provides that where the commission by any person of an offence is due to the act or default of some other person, that other person shall be guilty of an offence (section 36(1)).

<sup>127</sup>Regulation 21.

<sup>128</sup>The 1974 Act, section 38.

<sup>129</sup>For further details, see footnote 56. There are separate enforcement authorities in Northern Ireland (see the Northern Ireland Order, article 20(1)).

compromised. Similarly, where there is a lack of continuity of supply of LPG, through non-exclusive supply contracts, there is likely to be some duplication of resources as each supplier would be required to carry out their own risk assessment at the same set of premises. However, there does not appear to be any justification in the MHSWR for tank uplift or the three month notice period.

## Standardisation issues

### Introduction

1. Although some differences in the specification of certain valves were highlighted by two suppliers [X], the major suppliers believe that there are no significant technical or compatibility issues in relation to the LPG vessel and its fittings due to agreed standards laid out in the LPG CoPs and legal requirements set out in the PSSR. The survey and analysis carried out by Mott Macdonald for the CC confirmed that differences in tank valves and fittings are not significant.
2. One of the major suppliers [X], however, believed that the current safety baseline across all suppliers is in reality much lower than the standard set out in the LPG CoPs due to lack of monitoring and enforcement. This supplier [X] considered that the survey carried out by Mott Macdonald for the CC demonstrates a certain lack of compliance with safety standards. Differences in the procedures and systems put in place to ensure compliance is also allowed by the PSSR. Another of the major suppliers [X] stated that the key issue was not just compatibility but compliance with standards. A number of the major suppliers [X] told us that they encountered sub-standard installations when they acquired businesses.
3. The major suppliers identified the following key issues: lack of consistent documentation; poorly installed and maintained pipework and lack of consistency over ownership status of pipework; differing regulator specification; inconsistent tank siting and access issues.
4. Lack of consistency was partly put down to evolving legal requirements, in particular the documentation retention requirements laid out in the LPG CoPs [X]; the standardisation of tank fittings brought about by the PER [X]; the fitting of an

UPSO/OPSO valve and regulator required by the GSIUR from when they came into effect in 1998 (but not retrospectively) [X]; and regulations relating to the quality of pipework installation only put in place under the GSIUR [X].

TABLE 1 Specific standardisation issues identified by major suppliers

	[3<]	[3<]	[3<]	[3<]
Gas Quality Siting of Tank	Not an issue. Inconsistent due to the dynamic environment in which the tank is sited.	Not all LPG supplied conforms to BS 4250. [3<] acquisition: some tanks incorrectly sited.	Not an issue. Main requirements are laid out in general terms in LPGA CoPs and there is significant scope for interpretation ([3<] acquisition). Access can also be an issue.	Not an issue. Although there are some rules, their interpretation is not necessarily consistent. The site may also have evolved.
Filler Valve	Not all tanks have a back check valve which incorporates and isolating service valve, which is a ball valve .	[3<] has its own specification (specific unloading valve and red handwheel valve). Some competitors source filler valves of a different design from Europe.	Valves are compatible and adaptors are not needed for the majority of tanks.	Filling connections to the same standard but valve configuration can vary.
Other Tank fittings	PRV setting has on occasion not been consistent with colour of tank. Other fittings are not covered by the PSSR.	Colour of tank may be inconsistent with PRV setting. Issues relating to the PRV adaptor. Combo valve is unique to [3<]; float gauge may have a different screw type. Different valve settings and mountings. Valve quality and interchangeability.		
Pipework	Most pipework is made of PE but has come across badly installed, corroded pipework.	Majority of [3<] installation were installed before 1990 and utilise wrapped galvanised steel pipe, plastic coated copper pipe or a galvanised steel and polyethylene pipe combination.	Lack of standardisation.	Lack of clarity over responsibility for pipework has resulted in varying standards.
UPSO/OPSO valve Regulators; emergency valves	Most tanks should have an UPSO/OPSO valve by now. Some regulators may be underspecified.	Some tanks may not be fitted with UPSO/OPSO valve. LPGA CoPs are not specific.	Most tanks should have an UPSO/OPSO valve by now. Lack of standardisation of regulators, but cost of replacement is modest. Emergency valve tends to be standardised.	Many different specifications; hand lever vs hand wheel design for the emergency valve.
Documentation	The PSSR applies to tank and PRV only. No documentation relating to safety of pipework. Content of WSoE may differ but should be reasonably compatible, but there might be some gaps.	Little consistency in records and documentation [3<]. There is no documentation in relation to valves, pipework or regulators.		Document retention requirements have changed over time. WSoEs relate only to the safety devices.
Maintenance	Differing standards, as shown by acquisitions. No maintenance programme for pipework.	Schedules are unlikely to be harmonised.	Difference WSoEs may result in different standards of maintenance.	There may be varying maintenance and inspection systems due to past confusion over the applicability of the PSSR.

Source: LPG suppliers.

## Product compatibility

5. In the UK, all domestic bulk LPG is commercial propane. LPGA CoP1 Part 1 requires that it complies with BS4250, the key characteristics of which are as follows:

<i>Property</i>	<i>Commercial Propane</i>
Gauge vapour pressure, at 40°C (measured or calculated) (kPa), max.	1,550
Total sulphur content (mg/kg), max.	200
Mercaptan sulphur content (mg/kg), max.	50
Hydrogen sulphide content (mg/m <sup>3</sup> ), max.	0.75
Ammonia content (mg/m <sup>3</sup> in the vapour phase), max.	2.3
Copper corrosion, 1h at 40°C	Class 1
Tendency to freeze in valves	Pass
Dienes content, mole percent max.	0.5
Ethylene content, mole percent, max.	1.0
Alkynes content, mole percent, max.	0.5
C <sub>4</sub> and higher hydrocarbons content, mole percent, max.	10.0
C <sub>5</sub> and higher hydrocarbons content, mole percent, max.	2.0
R number	10 max
O number	33 max

6. We have been told by all of the major suppliers that all bulk LPG compliant with BS4250 is functionally identical and that propane from various suppliers can safely be mixed. Mott Macdonald's discussions with a range of suppliers did not identify LPG quality as an issue. Mott Macdonald was advised that any quality issue would be resolved with the producers directly and would thus not affect the customer.
7. BS4250 limits the impurity levels for on-spec LPG, with ammonia and water being especially important since they can have a corrosive effect on the tank. We were advised by several suppliers, corroborated independently by a tank contractor, that no significant internal corrosion has been discovered in any above-ground or buried tank at the 10-year service.
8. However, we were informed by one of the major suppliers [X] that although there is likely to be a high level of compliance with BS4250, due to the fact that the major oil companies are the suppliers, there have been rare occasions when it has been

supplied with LPG for sale which did not comply with BS4250 [redacted]<sup>1</sup>. Potential impurities which could be found in LPG which does not conform to BS4250 include corrosive impurities such as hydrogen sulphide, ammonia and caustic; carcinogenic impurities such as 1,3-butadiene; and free water which can lead to loss of supply. 'Heavy ends' in the LPG stay at the bottom of old tanks as the lighter propane and butane vaporise first. Over time, the gas odourising agent concentrates and may give rise to false alarms of reported leaks.

9. The same supplier also stated that it had acquired some tanks which had higher quantities of residue than its own stock. It is not known if the acquired tanks had significantly higher levels of corrosion than the supplier's previous stock. Our understanding is that the level of residue deposited is not simply a function of gas composition but also on the way the tank is used e.g. frequency and the rate of the turnover of the tank contents.
10. We do not believe that there is significant variability in the quality or compatibility of LPG supplied to the domestic market.

## **Tank valves and fittings**

### ***Evolution of tank and fitting standardisation***

11. One of the major suppliers [redacted] told us that standards for tanks and fittings have changed over time and explained that there is no obligation for tanks and fittings manufactured before May 2002, when the PER came into effect, to be brought to that standard.<sup>2</sup>

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<sup>1</sup>[redacted]  
<sup>2</sup>[redacted]

12. The HSE told us that the driver for the PER was to create a level playing field in Europe and ensure that pressure equipment could be traded across the EU. The PER therefore codified previous legislation and practice and, in effect, this would represent an agreed minimum safety level. The HSE also told us that, since UK legislation does not allow for a reduction in safety standards, the Directive has not led to a reduction in UK safety standards. The only significant additions to the UK pressure system safety regime resulting from the PER is the addition of CE marking to tanks, following a certification system and the requirement for manufacturers to keep technical documentation on tanks for 10 years from the time of manufacture of the last pressure equipment in the series (schedule 4 of PER).
  
13. The PSSR, which re-enacted the Pressure Systems and Transportable Gas Containers Regulations 1989 with some amendments) requires that pressure systems (including any associated pipework and protective devices shall be properly designed and properly constructed from suitable material, so as to prevent danger. The ACoPs states that, where they exist, British Standards provide a sound basis for the design of pressurised equipment.
  
14. We note that LPGA CoPs relating to the design of tanks and their associated fittings have been in place for over 20 years and have been revised only on a small number of occasions.<sup>3</sup> We also note that the LPGA CoPs recommend British Standards for the vessel and fittings, the pressure relief valve, shut-off valve and the contents gauge.<sup>4</sup>

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<sup>3</sup>CoP1 Part1 first printed in 1984, revised in 1998 and 2004; CoP1 Part2 (simplified version of Part 1 specifically for small installations) printed in 1994, amended in 2000 and 2003; CoP 15 printed in 1979, updated in 1983, 1990, 1992 and 1998.

<sup>4</sup>BSEN 13175; BSEN 12542, BSEN 13445, PD 5500, BS 6759 now replaced with BSEN 4126, BS 3151 now replaced with BSEN 17292, BSEN 13799.

15. Bulk LPG tanks and their fittings appear to have been highly standardised since at least 1989 and most probably since the early 1980s. Although standards have evolved over time for example to reflect technological improvements, such changes have not been frequent and are well documented due to the fact that British Standards have existed for a long period of time.
16. We note that the PSSR focuses on the equipment and does not lay down any rules relating to the location of the tank, although regulations 6 and 7 of the GSIUR require that the tank be installed in such a way that it can be used, filled or refilled without causing a danger to any person and that is placed where it cannot be damaged. Detailed guidance on safe location, distances and similar considerations is provided in LPGA CoP1, part 2.

### ***Overall tank valve arrangements***

17. The LPGA CoPs set out the valve arrangement on LPG tanks. There can be up to 7 types of valves on an LPG tank and their functions are described as follows:
  - (a) Pressure Relief Valve (PRV): this must be positioned in the vapour space of the tank (the top of the tank) and is required to protect the tank from being over pressurised by discharging gas to atmosphere at a predetermined tank pressure. Larger tanks have a number of these but the vast majority of domestic bulk tanks require only one. It is normal industry practice to fit the PRV with a relief valve adaptor to enable the PRV to be changed on a tank without having to decommission the tank.
  - (b) Filler Valve: to fill the tank with LPG.
  - (c) Ullage gauge: also known as maximum filling level gauge or ullage valve. This is a small bleed valve that has a dip tube attached to it within the tank. This tube extends to the 86.6 per cent full level of the tank. Most suppliers fill to the range

85-87 per cent. When the tank liquid level reaches this tube liquid LPG is discharged from the bleed valve indicating that the tank is full. The ullage gauge is usually combined with a vapour offtake valve.

- (d) Vapour off-take valve: this is the valve controlling the supply of LPG in a gaseous phase to the service pipework supplying the customer.
  - (e) Contents gauge: this is a small dial on the tank indicating the contents of the tank as a percentage of the total volume.
  - (f) Liquid offtake: this is fitted for the removal of liquid from the tank (eg for evacuating the tank prior to uplifting and/or for a commercial uses such as forklift trucks which utilise LPG as a liquid). It is not required for use by domestic bulk LPG customers and is normally blanked off. It is usually located on top of the tank with an internal dip tube to the bottom.
  - (g) Liquid drain. Where fitted, this provides an alternative means to drain the contents of the tank in the event of an emergency or problems with the liquid offtake.
18. Over the years, many different valve arrangements have been used on tanks, although they all include the above-mentioned functional valves. Three-in-line, and five-in-line valve systems are other variations referring to the number of valves on top of the tank.
19. [X] Mott Macdonald encountered in their survey three combo valves, all with same functionality: 66/50, 84/10 and 84/12. Mott Macdonald's survey also showed that [X] is not the only company using combo valves.
20. Mott Macdonald advised us that the specific arrangement of valves is immaterial once the basic functional valves are correctly included and the whole system

conforms to the PSSR or PER and the LPGA CoPs. In practice, a competent supplier and a competent suitably trained driver will be able to fill any of the domestic bulk LPG tanks irrespective of the valve arrangements. In the domestic bulk market, there are effectively three valve arrangements in service; 5-in-line, 3-in-line with a Combo valve, and the underground tank that is really a 5-in-line but all fittings raised up on the lid. The driver will be trained to fill each of these but will also be expected to fill many non-domestic tanks, also with different valve arrangements. In Mott Macdonald's view, domestic bulk installations will be by far the simplest the driver encounters.

### ***Level of standardisation of the filler valves***

21. All tankers observed by Mott Macdonald were fitted with the standard 1 $\frac{3}{4}$ " ACME connector, and we understand from a variety of sources that this is ubiquitous across the industry for domestic bulk filling.
22. When a tank is being filled, the product flow must be in one direction only, and safety is assured by the use of back pressure check (non-return) valves. These allow the flow of LPG liquid into the tank, but prevent the outward flow from the customer tank in the event of rupture or damage to the hose or filler valve fitting.
23. The LPGA CoPs require the additional safety feature of a positive shut off valve on the filler valve to be fitted at the first available opportunity, as reference below:
  - (a) LPGA CoP1 Part 1 Section 3.1.16.2 requires existing tanks that do not have this isolation valve to be modified at the first available opportunity.
  - (b) LPGA Technical Memorandum 21, 1987 requires existing tanks that do not have this isolation valve to be modified at the first available opportunity.

(c) The PER, when read in conjunction with the LPGA CoP, may be interpreted to identify a similar requirement to ensure safe filling operations.

24. The LPGA told us that it is now general practice in the UK to have this integral manual isolation in the filler valve. On the rare occasions where it is not fitted, suppliers use a filler hose adaptor.

### **Service pipework<sup>5</sup> and associated fittings**

25. The installation of pipework is regulated by the GSIUR.<sup>6</sup>

26. Mott Macdonald advised us that all service pipework it saw in its survey followed the standard format set out in the GSIUR, being a first stage regulator on the tank, usually accompanied by second stage and UPSO/OPSO, followed by a portion of underground LPG pipework in polyethylene (PE) terminating in an Emergency Control Valve (ECV). Mott Macdonald recognised that many older installations which predate the Gas Safety (Installation and Use) Regulations 1994 (which pre-dated the 1998 GSIUR) do not conform to this format.

27. LPG was included in the regulations which predated the existing GSIUR for the first time in 1994 and the LPGA CoPs relating to pipework were printed for the first time in 1990. We also note that CORGI registration was only put in place in 1988. It is therefore possible that pre-1990 pipework may be of lesser quality.

28. The HSE told us that the requirement that the LPG installation be fitted with a regulator and an UPSO/OPSO valve falls onto the person who “causes gas to be supplied from a gas storage vessel” and as such would apply to a supplier regardless

of the age of the tank. The HSE added that when the regulations which predated the existing GSIUR came into force, suppliers were given until 1 January 1997 to install regulators for regulating the pressure of gas and an automatic means (ie UPSO/OPSO valves) for preventing the installation pipework and gas fittings downstream of the regulator from being subjected to a pressure different from that for which they were designed. Therefore all domestic tanks should by now be fitted with an UPSO/OPSO valve.

## **Maintenance and documentation**

### ***Routine checks***

29. Mott Macdonald advised us that all drivers they observed carried out checks in similar ways but identified two major differences in the defect reporting and rectification procedure adopted by the suppliers surveyed:

- (a) The level of site defect reporting and action. Some suppliers complete site defect reports at each filling, others only do so when there is a defect to report. The level of detail in the forms varies from very basic to detailed reports covering over 20 aspects of the installation. Whilst Mott Macdonald found some suppliers to have impressive procedures for follow-up action to defect reports, they were not able to determine the extent of follow-up for all the suppliers they visited.
- (b) Some suppliers empower their drivers to carry out minor repairs on site and these drivers carry basic tools and spares for this purpose. The drivers record any such modifications to update the tank records.

### ***Tanks and associated fittings***

30. The general maintenance requirement for tanks and their associated fittings are laid out in the PER and PSSR. LPGA CoP1 Part 3 recommends examination frequencies

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<sup>5</sup>Service pipework is defined in the GSIUR as a pipe for supplying gas to premises from a gas storage vessel, being any pipe between the gas storage vessel and the outlet of the emergency control.

for the vessel and key fittings, but states that such frequencies may be varied by the “competent person” under the WSoE on the basis of a combination of experience, statistical data or equipment suppliers recommendations.

31. Examination frequencies stated in the LPGA CoP are either 5 or 10 years.
32. Responsibility for ensuring that the scope of the WSoE is suitable rests with the user of the tank, but the ACoP for the PSSR provides guidelines on what should be included, namely: the pressure vessel; all protective devices, even if they are on a part of the system which is not included; pipework if its mechanical integrity is liable to be significantly reduced by corrosion, erosion, fatigue or any other factors; and if failure resulting in the sudden released of stored energy would give rise to danger.

### ***Pipework and associated fittings***

33. The HSE pointed out that a pressure drop test or any other test carried out by LPG suppliers would only show if there is a leak, ie whether the pipe is safe at this particular point in time. It would not give an assessment of the general state of the pipework (ie whether it is rusty) and as such would be limited in effectiveness.
34. The HSE recognizes that the safety of pipework is an issue in this industry, which it is attempting to address independently of the CC’s investigation. Testing pipework via a pressure drop test also constitutes ‘work’. The HSE said that carrying out ‘work’ on the tank does not trigger the need to update the tank.
35. One of the major suppliers [X] told us that when it takes over tanks as part of an acquisition, it first carries out a visual inspection of the pipework. If the pipework is

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<sup>6</sup>See annex 1 for further detail.

made of plastic, it considers it to be sound. If not, it excavates the trench and renews the pipework.

36. We note that LPGA CoP1 part 3 states that above ground pipework should be inspected for corrosion and damage and that underground pipework should be surveyed for leakage by appropriate means at a frequency dictated by the risks associated with its location, pressure of operation and aggressiveness of the environment. We also note that the PSSR requires that those parts of the pipework in which a defect may give rise to danger should be included in the WSoE. We understand that service pipework on domestic premises is typically not included in the WSoE. We also understand that the GSIUR is mainly concerned with the correct installation of pipework and events which “might affect the gas tightness of the gas installation” rather than the general state of the pipework.
37. The HSE told us that it is not a requirement of any of the health and safety regulations to test the regulators and there is no practical need to test them:
- (a) There are only a small number of manufacturers of regulators and reliability is well established and statistically documented. (We note that there are British Standards relating to regulators and OPSO valves,<sup>7</sup> which require that the expected life of the regulator be stated by the manufacturer).
  - (b) Regulators are designed to minimise the possibility of tampering.<sup>8</sup>
  - (c) If the regulator is faulty the gas would be cut off.

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<sup>7</sup>BS3016 now replaced by BSEN 12864, 13785 and 13786 covers design, testing, marking, packaging, instructions for installation, use and maintenance.

<sup>8</sup>GSIUR 14(5) specifies that the regulator should be adequately sealed so as to prevent its setting from being interfered with without breaking the seal.

### ***Documentation retention***

38. The HSE told us that the regulatory requirements in terms of documentation retention were put in place in the Pressure Systems and Transportable Gas Containers Regulations 1989, which were unmodified from 1989 to 1999.
39. The PSSR re-enacted these regulations with only minor amendments. The only significant changes were made to accommodate the PER, which places a duty to retain information onto the tank manufacturer.
40. The ACoP for the PSSR specifies that the user/owner should keep the following documents readily available:
  - (a) any designer's/manufacture's/supplier's documents relating to parts of the system included in the written scheme;
  - (b) any documents required to be kept by the PER;
  - (c) the most recent examination report produced by the competent person under the written scheme of examination;
  - (d) any agreement or notification relating to postponement of the most recent examination under the written scheme; and
  - (e) all other reports which contain information relevant to the assessment of matters of safety. Where the owner/user is unsure whether certain records are relevant, the competent person should be asked to advise.
41. The LPGA CoP1 part 2 (section 8) and LPGA CoP1 part 3 (section 7) specify what records need to be kept. The extent to which the LPGA guidance has changed over time is unclear. It is also unclear whether the supplier should retain full 'history of periodic examinations' or only 'records of examination until superseded and records

of examinations containing information which will materially assist in assessing whether the system is safe to operate... until superseded'<sup>9</sup>.

42. The minimum content of a WSoE is defined by the ACoP and only limited clarification is added as part of CoP1 part 3. Regulation 9 of the PSSR clearly specifies what information needs to be recorded in the examination report, the timeframe for sending the report to the user and actions the user needs to take as a result of the examination. The PSSR also requires that all information kept under the PSSR be passed on to the new user/owner of a tank, when the system changes hands.<sup>10</sup>
  
43. Neither the regulations, the ACoP nor the LPGA CoPs require the retention of documentation relating to the location of the LPG installation.
  
44. It is possible that records (eg the manufacturer's certificate) for tanks which predate the 1989 regulations (and have not been fully refurbished since then) may be missing, as there was no regulation specific to pressure systems and the manufacturer may have gone out of business. However, the HSE pointed out the following:
  - (a) Even old tanks are very likely to have a serial number;
  - (b) To comply with the PSSR, suppliers would need to ensure that the tank is safe. This would assume that they would either have original information (but the original manufacturer's certificate may be missing for very old tanks) or would have recreated the information by carrying out a thorough examination of the installation. A WSoE would be harder to prepare if design information was not available.

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<sup>9</sup> The extracts quoted are taken from LPGA CoP1, parts 2 and 3 respectively.

<sup>10</sup>PSSR Regulation 14 (see also ACoP, paragraph 188).