

# Final Plan Attachment 8.6 V49 Supporting Information 1

Business Cases

GPI Safety Management Report 2014/15 Executive  
Briefing

December 2016

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# **GPI Safety Management Report 2014/15 – Executive Briefing**

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## Preface

The Gas & Pipeline Infrastructure Safety Management Report has been compiled by Energy Safe Victoria's (ESV) Gas & Pipeline Infrastructure Safety (GPI Safety) Division.

ESV is the independent regulator responsible for the technical regulation and safety of Victoria's pipelines and electricity and gas sectors. The GPI Safety Division is specifically responsible for the industry segments that include natural gas transmission pipelines and non-natural gas pipelines (includes liquid hydrocarbon pipelines), the Australian Energy Market Operator (AEMO), natural gas distribution, reticulated liquefied petroleum gas (LPG), landfill biogas, liquefied natural gas (LNG), natural gas retailers and LPG retailers.

This report provides information about the level of compliance of sector participants together with their responses to ESV's auditing and monitoring of participants' reporting and ongoing safety management. The report also aims to highlight the GPI Safety Division's educational, encouragement and enforcement activities, as well as operational improvements made throughout the year and the resulting near-term priorities.

The report is an integral part of ESV's strategy to provide transparent reporting around these critical activities and to:

- monitor the safety performance trends of each business over time
- identify potential systemic issues in the industry or individual businesses requiring attention by ESV or other regulators
- inform the government and industry about ESV's activities in performing its regulatory role
- report on how the industry is performing.

In so doing, this report will assist in holding the organisations we regulate accountable for delivering on their primary legal accountability to minimise hazards and risks to the public, property and the environment as far as reasonably practicable.

**Paul Fearon**  
**Director of Energy Safety**  
**June 2016**

## Executive summary

Over the last decade, pipeline disasters across North America, Europe and Asia have resulted in up to 55 people killed and many hundreds more injured, town evacuations and serious damage to major roads and infrastructure. In the same period, six major losses of containment spilled nearly seven million litres of oil, petrol, diesel and crude oil. In 2015 alone, four major accidents in North America resulted in the release of close to eight million litres of condensate, gas and oil emulsion.

By contrast, the Australian pipeline industry (with more than 5000 kilometres of licensed pipelines in Victoria transporting gas and liquid petroleum) has a commendable safety performance, with no recorded fatalities associated with pipeline damage and far lower incident rates.

While this level of performance is the goal of every safety regulator, long periods with relatively few incidents have the potential to create an air of complacency. Paradoxically, this requires even greater attention to safety and, more importantly, a risk-based culture of safety.

For example, with several of the more serious North American accidents, cost-cutting and expense minimisation were found to be significant contributing factors. Pipeline risk is dynamic, increasing as assets age and corrode and as the types of activities in and around pipelines and their easements change. As a result, the successful mitigation of risk entirely depends on the level of risk, not necessarily the resources that organisations choose to make available from one budget cycle to the next.

Empirical evidence also suggests that most high-impact, low-probability incidents occur because of the aligned failures or partial failures of a number of physical and procedural barriers (threat barriers) designed to prevent injury or damage to people, property and the environment, rather than because of an isolated major failure.

The primary responsibility for ensuring the existence and efficacy of these barriers lies with the organisations ESV regulates, and starts with their safety framework documentation, which provides the basis for their implementation and maintenance. This documentation is also a benchmark for ESV's compliance audits, which ESV takes particularly seriously given that isolated and seemingly innocuous failures can, if aligned, have catastrophic consequences.

### **The status of safety framework documentation**

During the 2014/15 reporting period, the Licensed Pipelines Industry Group demonstrated improvements in its safety framework documentation and practices. This is the result of significant work with this industry group over the last few years. However, organisations within each industry group still need to develop a culture of proactivity rather than reactivity when it comes to risk mitigation. As a result, following its annual strategic audit review, ESV increased its focus on the Non-licensed Gas Infrastructure Industry Group, which identified several common findings that, in combination, demonstrate asset protection measures are being removed.

### **The requirement for a systemic, risk-based approach to mitigation**

The Acts and Regulations stipulate a duty to protect the community, property and environment from an asset, to take steps to avoid an unreliable supply of gas, and to refer technical compliance to the relevant Australian Standards. The Australian Standards require the identification of threats and the implementation of control measures so that risks to people, property and the environment are reduced to a level as low as reasonably practical (ALARP).

In reality, an organisation's behaviour can affect its approach to safety, and ESV wants to see more evidence that risk-based approaches are being adopted, implemented and sufficiently resourced, and that risk-mitigation requirements are being driven by effective analysis.

This is an approach that will need strong senior management engagement and promotion, the necessity for which was highlighted in several critical areas during the 2014/15 audit program.

In 2013/14, incidents damaging mains and services peaked and there has been no level of improvement to these statistics that demonstrates asset owners are understanding and identifying the root cause of these incidents and sufficiently mitigating the risk to infrastructure and potential harm to people. Third-party interference and structural failures have the potential to cause high consequence events involving death and significant supply interruption, and these were still the biggest risks facing assets operated by pipeline licensees and distribution businesses during 2014/15 (as evidenced through reported KPIs). Unauthorised encroachments within three metres of a licensed pipeline have increased by 15 per cent and the number of hits on mains and services (causing damage and gas escape) remains excessively high.

Safety framework documentation is another area for concern and often does not articulate a risk-based approach. After the AS2885 revision in 2012 (which, for example, now requires the incorporation of a Pipeline Integrity Management Plan and a Repair Plan), safety framework documentation complying with pre-existing standards is no longer acceptable. Although the revised standards are less prescriptive, an increased emphasis on a risk-based approach to managing and operating assets is now required. Additionally, while documentation is submitted by licensees and gas companies under senior management signature, the quality and detail of the submissions raises concerns over the review process conducted by signatories.

The application of industry best practice, which derives from historical processes and pre-existing standards (for example, aligning services perpendicular to mains, and locating meters on the side of a property opposite to the driveway), has generally been observed by ESV as declining and no consistent alternative arrangements have been implemented.

Of particular concern to ESV was the audit program's identification of a weakening of threat barriers, which resulted from the removal of asset protection and other physical barriers (for example, by not installing and testing the continuity of tracer wire on non-metallic pipe work).

### **Problems that may occur when a risk-based approach is missing**

Evidence suggests that, rather than a one-off failure, the failure of a number of physical and procedural barriers causes most high-impact, low-probability incidents. Currently, risk control solutions reflect past practices and are generally not being renewed to ensure future risk is mitigated. As a result, the industry needs to demonstrate its ability to comply with safety obligations where assets have degraded or significantly aged (and life cycle expiry is imminent), where standards have been revised and where licensed pipelines have been non-operational for reasons other than as provided in the condition of licence. Proposed land development and third-party works around pipelines need to not only be accurately captured but also competently assessed and, if necessary, have the conditions of work established by the pipeline licensees and distribution businesses before on-site activities commence.

### **Why doing the minimum with less is not the answer**

ALARP is characterised by the consideration of absolute risk and justifiably sacrificing budget and resources in order that all risk is being acceptably mitigated. This is not consistent with a "risk index" approach to risk mitigation, where the cost and overall profitability, rather than the level of risk itself, drives budgets for managing assets and implementing control measures.

From its field audits, ESV identified a series of examples where it appears cost-cutting solutions are being implemented at the expense of ensuring ALARP, and where asset management and maintenance is being driven by cost rather than ALARP principles, compromising risk mitigation measures.

Field activities are being outsourced without operational requirements being adequately scoped or contractors subsequently supervised, and procedures for complying with minimum worksite safety standards are not being followed. Drawings are also not being properly maintained and reviewed (for example, structures and third-party assets within three metres of pipelines are not shown). Coupled with this, National Gas Competency Training is not being implemented, and there is no capability for in-house engineering assessment of third-party works proposals.

ESV is particularly concerned about whether pipeline licensees have the appropriate skills to deal with current and ongoing challenges, given staff reductions. The intellectual property and in-house engineering assessment capability to vet contractor competency is essential. This is becoming a significant issue, given an increase in the number of third-party work applications and land development referrals, and pipeline licensees' ability to conduct land classification reviews and to ensure asset management procedures and drawings reflect altered conditions.

Most importantly, threat barriers are being weakened (for example, assets are being managed by contractors before their competency to do so has been established) or falling away entirely leaving only a single threat barrier, such as manual proving.

## **Conclusions**

Many organisations are missing specific and fundamental building blocks when it comes to effectively managing the safety of their facilities and therefore the safety of the public and the environment. Loss of containment incidents are still occurring, unauthorised works near pipelines are taking place, and licensed pipelines and gas mains and services continue to be damaged.

In response, ESV will use its 2015/16 facility audits to establish whether organisations can effectively maintain threat barriers by specifically focusing on the training of contractors and the staff responsible for engaging them, contractor supervision, in-house engineering assessment skills, and the maintenance of accurate and up-to-date drawings.

In particular, ESV will focus on establishing whether senior management has adequate oversight and that, rather than being reactive and assigning resources to mitigate risk only as required, it is undertaking a risk-based approach to protecting the community, property, and the environment via a systemic approach to audit findings and a proactive, risk-based response to risk mitigation.

## Structure of the GPI Safety Management Reports

The Gas & Pipeline Infrastructure (GPI) Safety Management reporting for 2014/15 now comprises a high-level briefing document and three industry group reports:

- GPI Safety Management Report 2014/15, Executive Briefing.
- GPI Safety Management Report 2014/15, Licensed Pipelines.
- GPI Safety Management Report 2014/15, Non-licensed Gas Infrastructure.
- GPI Safety Management Report 2014/15, Natural Gas Retail.

The Executive Briefing (to be read in conjunction with each industry group report) comprises:

### Part 1

- GPI Safety Management summary of observations, which provides:
  - a guide to the key findings for each industry group that ESV monitors (Licensed Pipelines, Non-licensed Gas Infrastructure, and Natural Gas Retail)
  - the focus and priorities for 2015/16 for each industry group that ESV regulates.

### Part 2

- Background, which provides:
  - information about ESV's effectiveness in delivering safety and risk-based regulation
  - an explanation of and changes to ESV's prioritisation of focus.
- ESV's role – scope and focus, which provides:
  - an overview of ESV's related roles, responsibilities, scope and focus.

The GPI Safety Management Reports (Licensed Pipelines, Non-licensed Gas Infrastructure, and Natural Gas Retail) discuss ESV's activities in relation to each industry group and cover six main areas:

- monitoring, auditing and inspections, which details ESV's activities and findings from monitoring the existence and efficacy of threat-barriers, including basic safety framework documentation, self-reporting and key performance indicators, and audit outcomes
- acceptances and approvals, which reports on the status of safety framework documentation (Safety Case and Safety Management Plan) submissions and approvals and highlights any emerging issues
- education and partnerships, which discusses ESV's collaborative engagements with industry and the community to address emerging risks and facilitate safety outcomes via education and partnerships
- compliance and enforcement, which reports on any compliance and enforcement activities ESV was required to undertake
- focus and priorities, which discusses areas ESV intends to prioritise for the coming year
- each industry group's threat-barrier diagrams to manage loss-of-containment risks.

## Part 1

### 1. GPI Safety Management summary of observations

The Gas & Pipeline Infrastructure (GPI) Safety Management Report outlines a series of key findings for each industry group during the course of ESV's activities for 2014/15, and summarises the focus and priorities for 2015/16.

#### 1.1. Licensed Pipelines

Work done with this industry group during 2013/14 formed the basis for the progress the industry group made during 2014/15 in terms of both its safety framework documentation and practices. Areas requiring further improvement include the following.

##### **Safety framework documentation quality and consistency**

The quality and consistency of the safety framework documentation being submitted is progressively aligning with ESV's expectations. While documentation is submitted under company senior management signature, the quality and detail of these submissions have left ESV questioning the extent of senior management oversight.

##### **Unauthorised third-party encroachment**

Unauthorised third-party encroachment within three metres of a pipeline is a threat that shows no sign of decreasing and will remain an ongoing focus for ESV. A general lack of community awareness about safe excavation around underground assets and licensees neglecting to execute external interference control is contributing to this situation.

##### **Design considerations**

A lack of appropriate consideration of design solutions when undertaking pipeline repairs and augmentation works (in some cases to support the use of standardised fittings, established procedures and available operator skills) has the potential to impact asset life and will be monitored by ESV to ascertain whether this requires closer focus.

##### **Environmental Performance Reports**

ESV understands that the annual Environmental Performance Reports submitted to date actually address safety issues and are not environmentally focused. In response, the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) intends to issue a set of guidelines for producing these reports.

##### **Changes impacting safety framework documentation and practices**

ESV must be informed via a Safety Case/Safety Management Plan update of any changes with the potential to impact currently accepted safety framework documentation and practices.

Similarly, pipeline repairs and changes to pipeline operation can impact pipeline licences and their conditions. ESV will pursue licensees to identify how their licence conditions will be reviewed under these circumstances.

##### **Knowledge transfer and staff turnover**

ESV is concerned about effective knowledge transfer and high staff turnover resulting in the ongoing replication of issues across multiple construction projects. Despite having established specialised channels of communication to address this issue, the problem continues to impact ESV's regulatory efficiency. ESV will be encouraging the organisations it regulates to establish more effective systems for knowledge transfer.

## 1.2. Non-licenced Gas Infrastructure

ESV largely concentrated on this industry group during the course of the reporting year (and the natural gas distribution segment in particular).

### The mains renewal program

ESV is concerned about the lack of detailed reporting about the mains renewal program, preventing ESV from monitoring its progress.

### Incident statistics

The number of damaged mains and services remains high. A lack of hand-proving by third parties and work practices when installing mains and services were identified by ESV during its audit program as contributing to this situation.

### Training, competency and operational maintenance routines

Other areas of concern resulting from ESV's field audit program involve:

- the training and competency of both staff and contractors as well as the degree of contractor supervision being undertaken
- a lack of adherence to operational maintenance routines as specified by accepted Safety Cases.

## 1.3. Natural Gas Retail

While still an area of attention, this industry group holds a relatively lower risk profile and does not justify the same level of active monitoring as the other industry groups ESV is required to regulate. However, ESV encourages all members of this industry group to:

- ensure that Safety Case revisions are submitted on time
- participate in the Gas Emergency Management Consultative Forum (GEMCF), which plays an important role in assuring the emergency management preparedness of Victoria's energy sector.

### Assets and facilities

During the reporting period, ESV identified several areas where non-retail assets and facilities have been incorporated in accepted Safety Cases. Amendments are being requested for these previously accepted submissions by way of documentation updates and the creation of additional Safety Cases, where appropriate.

### New entrants

The Director of Energy Safety approved Safety Cases for two new gas retail entities (Click Energy Pty Ltd and CovaU Pty Ltd).

Following safety framework Acceptance Audits, these new entrants demonstrated compliance with the Gas Safety Act 1997 and the Gas Safety (Safety Case) Regulations 2008.

### The Gas Emergency Management Consultative Forum

An industry forum for natural gas retailers and network operators of the Victorian gas market operated by the Australian Energy Market Operator (AEMO), the Gas Emergency Management Consultative Forum (GEMCF) provides market participants with an important opportunity to participate in system-wide emergency exercises and to test and improve their own emergency preparedness responses and recovery.

Although participation has generally been good, ESV will continue to encourage all natural gas retailers to participate in this forum.

## ESV audits

While no specific compliance audits were undertaken during the reporting period, ESV is committed to maintaining some level of compliance audit activity across all industry segments.

### 1.4. Focus and priorities for 2015/16

ESV is aiming to focus its priorities for 2015/16 on the industry groups that are yet to have their five-yearly Safety Case and Safety Management Plan revisions accepted. This includes the natural gas distribution companies and non-natural gas licensees that have revised submissions overdue for acceptance.

Having issued compliance document development guidelines to various industry groups, ESV will be seeking alignment between submissions and the guidelines.

#### Licensed Pipelines

ESV's focus and priorities for 2015/16 will include:

- Training and competency, and particularly the expertise of personnel charged to appoint contractors. ESV will also be seeking assurance that licensees:
  - are able to adequately scope project works
  - have sufficient expertise to enable the vetting of contractor competencies and performance
  - are capable of ensuring contractors clearly understand the obligations that the licensee is required to meet.
- Field auditing of pressure reduction facilities, including city gates and field regulators.
- Improved reporting from the dig-up verification program, which often does not provide a sufficiently detailed summary of inspection findings.
- External interference and ensuring non-natural gas licensees have robust planning mechanisms to address unauthorised third-party encroachment around pipelines.
- Supporting the industry's development of leading KPIs that will better describe the health of risk management processes and reporting.

#### Non-licensed Gas Infrastructure

ESV's focus for 2015/16, apart from continuing its verification audit work, will be city gate and field regulator facilities, as well as the proactivity of regulated entities when it comes to the training and competency of in-house field staff, contractors and staff tasked with assessing and appointing skilled and competent contractors.

#### Natural Gas Retail

ESV continues to monitor the Natural Gas Retail Industry Group and has identified several areas where non-retail assets and facilities have been incorporated in accepted Safety Cases. Amendments to these previously accepted submissions are being requested, by way of documentation updates and the creation of additional Safety Cases, where appropriate.

Electronic questionnaire/survey audits have been successful in other regulated industry sectors, and ESV intends to roll out this form of compliance auditing to the Natural Gas Retail segment in the next reporting period.

## Part 2

### 2. Background

Energy Safe Victoria (ESV) is the regulator responsible for the technical regulation and safety of Victoria's pipelines and electricity and gas sectors.

ESV's vision for Victoria is for community, industry and regulators to share a strong commitment to the safety of its pipelines, and the safe and efficient supply and use of electricity and gas for the benefit of all Victorians.

While its primary role is to encourage compliance and improved safety performance throughout Victoria's electricity, gas and pipeline sectors, ESV performs its functions and exercises its powers to achieve objectives stated by the Electricity Safety Act 1998, the Gas Safety Act 1997, and the applicable objectives of the Pipelines Act 2005.

ESV also continues to focus attention on ongoing and long-term safety outcomes, concurrently responding to emerging risks and issues via its accident prevention and compliance activities and its educational initiatives and cooperative partnerships. ESV's Corporate Plan and Annual Report also provide information about ESV's aims and objectives<sup>1</sup>.

In terms of ESV's broader functions, aims and objectives, the GPI Safety Division<sup>2</sup> is specifically responsible for the industry segments that are the subject of this report, which include natural gas transmission pipelines and non-natural gas pipelines, the Australian Energy Market Operator (AEMO), natural gas distribution, reticulated liquefied petroleum gas (LPG), landfill biogas, liquefied natural gas (LNG), natural gas retailers and LPG retailers.

#### 2.1. The GPI Safety Management Reports

The 2014/15 GPI Safety Management Reports (Licensed Pipelines, Non-licensed Gas Infrastructure, and Natural Gas Retail) have been compiled by the GPI Safety Division.

Providing information about the part the GPI Safety Division plays in terms of achieving ESV's broader role, the reports aim to communicate the degree of compliance from the industry groups ESV regulates and their responses to auditing, monitoring, reporting and ongoing safety management. The reports also aim to highlight the GPI Safety Division's educational, cooperative and enforcement activities, as well as reporting on any operational improvements made throughout the year and the resulting near-term priorities.

Unless otherwise stated, any reference to ESV relates to that part of ESV's role addressed by the GPI Safety Division.

#### 2.2. Effectiveness in delivering safety

ESV's success in ensuring safety and compliance outcomes relies on the actions, commitment and cooperation of a range of industry, community and government

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<sup>1</sup> <http://www.esv.vic.gov.au/About-ESV/Reports-and-publications>.

<sup>2</sup> Established as a new division of ESV in November 2011.

stakeholders, each of which has a direct interest in achieving electricity, gas and pipeline safety.

The underlying basis for ESV's compliance strategy involves a series of required community safety and environmental outcomes, which are achieved when:

- actual and foreseeable harm<sup>3</sup> to the community, industry workers and the environment are clearly identified
- regulated parties (industry and community) comply with those parts of the Acts, regulations, and prescribed standards and codes that:
  - are relevant to their particular assets and activities
  - either avoid the occurrence or mitigate the severity of foreseeable harm.

ESV explores appropriate amendments to the statutory regime or prescribed standards and codes when experience indicates this underlying basis is no longer valid.

### **The GPI Safety Division and ESV's responsibilities**

In delivering greater safety and measures for accident prevention, the GPI Safety Division considers physical and procedural barriers to injury or damage to people, property and the environment. This includes barriers between a possible threat and the point of loss of control (precautionary barriers), and barriers between the point of loss of control and potential outcomes (mitigation barriers).

Empirical evidence suggests that most high-impact, low-probability incidents occur because of the partial or complete failure of a number of these barriers, rather than a single, one-off failure. This is often referred to as the Swiss Cheese model.

The primary responsibility for ensuring the existence and efficacy of these barriers lies with the organisations the GPI Safety Division regulates, and each industry group report illustrates the type of threat barriers expected to be in place to address a loss of containment (which is the primary cause of death or injury to people or damage to property or the environment).

The GPI Safety Division specifically meets relevant ESV responsibilities by:

- monitoring the existence and efficacy of these barriers, including auditing compliance with standards and requirements
- accepting, verifying and approving the implementation or revision of some barriers as required by legislation
- cooperatively engaging with industry and the community to address emerging risks and facilitate safety outcomes via education and partnerships
- enforcing compliance with standards and requirements when the need arises.

Given the breadth of work the GPI Safety Division can undertake, the outcomes focus, and the importance of managing regulatory burdens on business, the division adopts a risk-based approach to prioritising its activities.

#### **2.2.1. Risk-based regulation**

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<sup>3</sup> MK Sparrow, *The regulatory craft: Controlling risks, solving problems, and managing compliance*, 2000, Brookings Institution Press, Washington, DC.

The strategic audit plan describes the ESV audit universe and prioritises areas for industry group audits over the medium term. The audit universe can be described in terms of the scope captured by “who” and “what” (see Section 3.1).

The prioritisation of focus involves the entities ESV regulates and is based on an annual risk assessment (described in Section 2.2.2). The prioritisation’s outcome informs the development of the annual audit plan, which describes the specific audit topics, resource allocation and auditees.

ESV expects more of its audit work to involve regulated entities with the highest priority scores.

### 2.2.2. The prioritisation of focus

ESV prioritises its focus on regulated entities by establishing a relative risk score, which is a combination of the regulated entity’s generic activity risk and its performance and track record.

Generic activity risk seeks to be objective and is the product of a risk assessment that considers the:

- potential consequences to people, property, services and the environment
- possible exposure, based on the activity’s physical characteristics (for example, the length of a pipeline) and location (for example, where a pipeline traverses a high risk/consequence area).

For its own purposes, ESV also captures the performance and track record of all the organisations it regulates. In this respect, company performance relates to ESV’s opinion, which is formed from information ESV gathers through its interactions with regulated entities. Inevitably, this involves subjective judgment. ESV considers a combination of:

- willingness, involving a regulated entity’s:
  - **openness** (the efficiency, extent and openness of self-reporting)
  - **care** (evidence of self-learning, for example the investigation of incidents, follow-up root cause analysis and implementation of lessons learned)
  - **responsiveness** (responsiveness to ESV)
- capability, involving a regulated entity’s:
  - **safety framework** (the quality of documentation and record-keeping, Safety Case/Safety Management Plans, and the currency and accuracy of route maps and technical/as-constructed drawings and other documentation)
  - **people** (training/contractor policies, competency and application of skills)
  - **output** (quality of technical output/compliance with technical procedure)
  - **self-checks** (self-compliance and improvement processes)
  - **externalities** (other issues that can impact an organisation or its staff and the focus on safety).

Also considered for inclusion is any history of incidents (such as a loss of containment, near miss<sup>4</sup>, or asset failure) or other historical issues (such as stakeholder complaints).

There have been several broad changes in the prioritisation of focus compared with last year's strategic audit plan review:

- an improvement in the Licenced Pipeline Industry Group, given the progress of safety framework documentation, which in many cases had previously been non-existent, and an ongoing audit regime focusing on licenced pipeline easements.
- an increased focus on the natural gas distribution component of the Non-licensed Gas Infrastructure Industry Group, given the degree of technical compliance (in accordance with Australian Standards and accepted Safety Cases) and responsiveness of the natural gas distribution businesses that emerged from the mains renewal program audits.

Along with immediacy and the potential consequences of risk, the outcomes of the strategic audit plan (and in particular ESV's views about regulated entity willingness and capability) are used to inform judgments about compliance and enforcement action.

Figure 2-1 shows the activity risk scores in relation to regulated entities and their industry segment<sup>5</sup>.

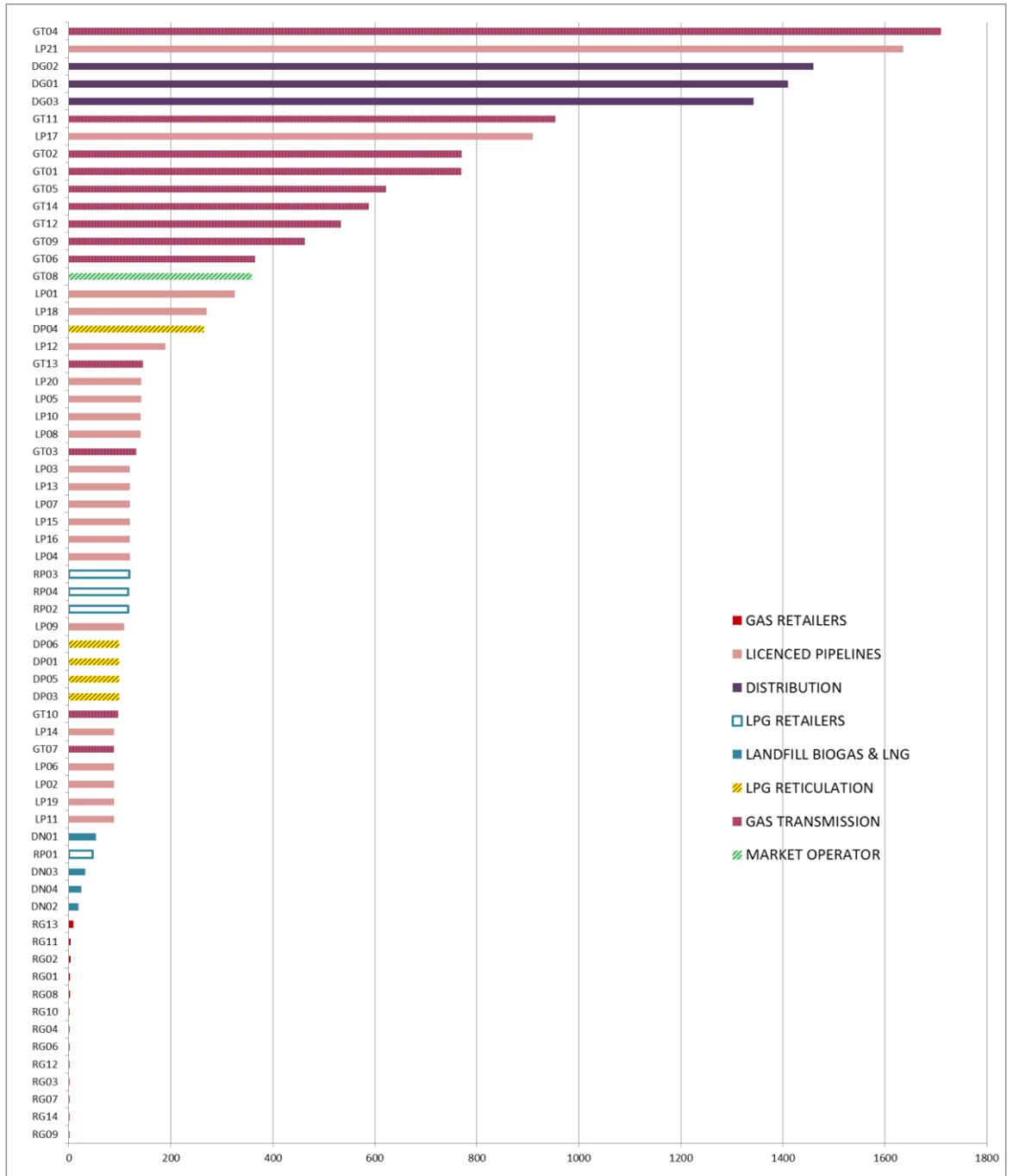
Compared with last year, any changes to activity risk scores are due to improvements in the objective data sets used (for example, after a review of all pipeline lengths and the total asset infrastructure for the natural gas and LPG distribution businesses, and differentiation of natural gas retailers based on the volume of customers serviced and their facility risks).

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<sup>4</sup> An event that almost qualified as a reportable incident.

<sup>5</sup> Due to the subjective nature of ESV's scoring when it comes to a regulated entity's performance and track record, only the objective activity risk scores are being shown. ESV continues to improve the dataset input that defines these activity risk scores.

**Figure 2-1 - Activity risk by industry segment**



### 3. ESV's role – scope and focus

The nature and scope of ESV's activities are defined by its mission, objectives, functions and responsibilities, which are described by the Energy Safe Victoria Act 2005 (ESVA), the Electricity Safety Act 1998, the Pipelines Act 2005 (PA), the Gas Industry Act 2001 (GIA), the Gas Safety Act 1997 (GSA) (the Acts), and subordinate regulations.

The Governor in Council appoints the Director of Energy Safety for Victoria (under the ESVA) who is responsible to the Minister and the Victorian Parliament for (among other things) the safe supply of gas and the safe operation of pipelines in Victoria.

The ESVA enables ESV to do everything necessary to best achieve the objectives and functions specified for it in any Act. It also requires ESV to act in accordance with its Corporate Plan<sup>6</sup> (unless exempted by the Minister).

#### 3.1. Scope

##### 3.1.1. What

ESV accepts and assesses compliance with gas company and pipeline licensee<sup>7</sup> Safety Cases, Safety Management and Environmental Management Plans to ensure appropriate safety and environmental outcomes, as well as accepting and assessing compliance with Safety Cases for natural gas and LPG retailers.

The PA, GIA, and GSA govern the scope of these activities.

##### **The Pipelines Act 2005 (PA)**

The PA applies to pipelines on public land for the conveyance of petroleum, oxygen, carbon dioxide, hydrogen, nitrogen, compressed air, sulfuric acid or methanol. Exceptions generally include pipelines carrying:

- gaseous hydrocarbons at a pressure less than 1050 kilopascals and with a hoop stress less than 20 per cent of the specified minimum yield stress
- liquid hydrocarbons at a pressure less than 345 kilopascals, or with a length in public land less than 100 meters, or with a nominal internal diameter less than 100 millimeters.

The PA requires a licensee to construct or operate a pipeline (in accordance with the conditions of that licence) and compliance with the Australian Standard (AS) 2885, Pipelines—gas and liquid petroleum.

Many powers held by the Minister under the PA are delegated to the Executive Manager GPI Safety Division or to various officers of the Department of State Development, Business and Innovation (DEDJTR). Some PA powers are also delegated to the Director of Energy Safety (ESV) in his capacity as Director under the Energy Safe Victoria Act 2005.

##### **The Gas Industry Act 2001 (GIA)**

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<sup>6</sup> <http://www.esv.vic.gov.au/About-ESV/Reports-and-publications>

<sup>7</sup> As defined in the relevant Act.

The GIA specifically relates to the natural gas industry and generally:

- defines a transmission pipeline as being a pipeline for the conveyance of gas in respect of which a person is the licensee under the PA
- requires that a person must not engage in the retail sale of gas, or provide a service by means of a distribution pipeline, without holding a relevant licence.

### **The Gas Safety Act 1997 (GSA)**

The GSA is the legislative instrument that provides for the safe conveyance, sale, supply, measurement, control and use of gas, and for the general regulation of gas safety. The Australian Energy Market Operator (AEMO), natural gas transmission pipeline companies, natural gas distribution companies, and natural gas retailers under the GIA are all defined as gas companies for the purposes of the GSA. LPG businesses become gas companies under the GSA if they are declared to be so by Order of the Governor in Council.

Under the PA, licensees have general duties for safety and environmental protection and are obliged to comply with Safety Management and Environmental Management Plans accepted by ESV and the Minister, respectively.

Under the GSA, gas companies have general duties and are obliged to comply with a Safety Case accepted by ESV. An accepted gas Safety Case for a licensed transmission pipeline is deemed to be an accepted Safety Management Plan under the PA.

#### **3.1.2. Who**

The energy sector regulated by ESV comprises three main industry groups and nine industry segments:

- The Licensed Pipelines Industry Group includes:
  - natural gas transmission pipelines
  - non-natural gas pipelines
  - the market operator (AEMO).
- The Distribution Industry Group includes:
  - natural gas distribution
  - reticulated LPG
  - landfill biogas
  - LNG.
- The Retail Industry Group includes:
  - natural gas retailers
  - LPG retailers.

To clarify the requirements each industry segment must meet, the industry groups have been reorganised this year under the following categories:

- Licensed Pipelines, which includes:
  - natural gas transmission pipelines
  - non-natural gas pipelines
  - the market operator (AEMO).
- Non-licenced Gas Infrastructure, which includes:

- natural gas distribution
- reticulated LPG
- LPG retail
- landfill biogas
- LNG
- Natural gas retail.

For a list of the regulated entities ESV regulates in each industry group, see Section 2.1 of that industry group's GPI Safety Management Report.

A regulated entity's business activities may fall across more than one segment, requiring it to meet a range of different compliance obligations. As a result, the regulated entities ESV regulates may comprise a number of subordinate entities. In response, the GPI Safety Management Reports reference regulated entities within each industry segment rather than single regulated entities operating across a number of segments.

### 3.2. Ensuring compliance and the regulatory response

ESV's organisation-wide compliance and enforcement strategy has two components:

- encouraging and facilitating cooperation with organisations willing to comply
- taking proportionate action against organisations unwilling to comply.

As an organization, ESV uses the approach advocated by Ayers and Braithwaite<sup>8,9</sup> for selecting compliance tools for a particular task and the progressive escalation of compliance issues (educate, encourage, enforce).

Table 3-1 shows the enforcement pyramid (its common representation<sup>10</sup>), which starts with education and escalates as necessary.

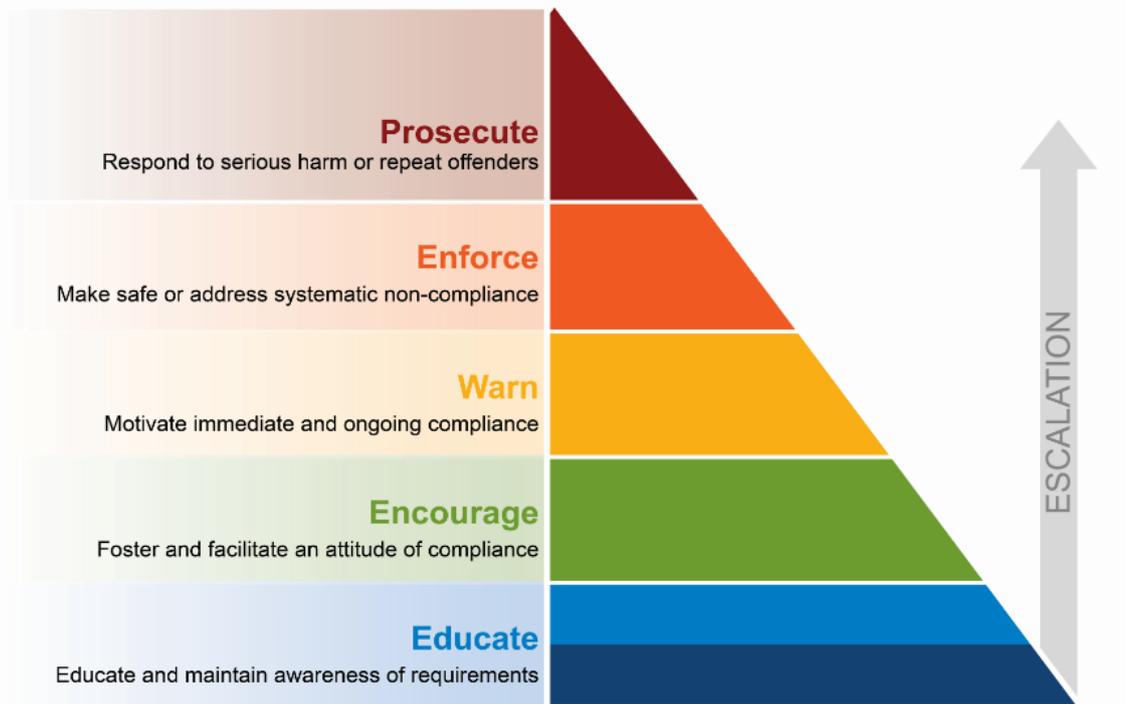
**Table 3-1 – The Enforcement Pyramid**

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<sup>8</sup> "Rewards and Regulation", J. Braithwaite, Journal of Law and Society Volume 29 Number, 1 March 2002 ISSN: 0263-323X pp 12-26.

<sup>9</sup> "Responsive Regulation: Transcending the Deregulation Debate", Ayres & J Braithwaite, 1992, Oxford University Press, New York.

<sup>10</sup> The electricity, gas and pipeline sector compliance and enforcement tools available under the legislation administered by ESV vary from sector to sector.



ESV undertakes a series of activities in line with each of the steps taken in the compliance and enforcement approach, and only expects to escalate enforcement action where poor responses do not improve. Since the creation of the GPI Safety Division, ESV has concentrated on education and encouragement, which has mostly received a very positive response.

### 3.2.1. Educate

#### **Educate and maintain awareness of requirements**

ESV:

- maintains close contact with relevant regulators and industry associations
- actively communicates legislative requirements and changes to legislation through industry meetings and direct communication
- issues guidance material
- provides feedback to all regulated entities as part of its assessment of Safety Case, Safety Management Plan and Environment Management Plan submissions
- works in partnership with regulated entities to address emerging risks and issues.

### 3.2.2. Encourage

#### **Foster and facilitate compliance**

ESV actively engages regulated entities through audits and site inspections.

### 3.2.3. Warn

#### **Motivate immediate and ongoing compliance (formal warning and non-compliance notices)**

Representing ESV's lowest enforcement level, warnings are most commonly issued for first offences where there are no serious consequences.

Warnings can initially be verbal and are confirmed in writing (with the relevant executive of the regulated entity concerned) as soon as possible.

Non-compliance notices, which detail compliance requirements, most commonly arise from inspections and audits.

#### 3.2.4. Enforce

##### **Improvement, infringement, official warning, and prohibition notices and directions**

ESV issues improvement notices, infringement notices, official warning notices, prohibition notices and directions after a serious incident or risk to safety and specific action is required to avoid harm to people or to property.

Penalties exist for failing to comply with these notices, which include:

- directions for safety reasons and in emergencies
- improvement notices for contraventions of the GSA and regulations, the PA and pipeline licence conditions
- prohibition notices to gas companies and retailers for serious gas safety risks, and to pipeline licensees for serious risks to health, safety or the environment.

A gas company may also be required to update its Safety Case or a pipeline licensee to update its Safety Management or Environmental Management Plan for its continued acceptance.

##### **Improvement notices**

Improvement notices are used to stop ongoing or repeated breaches of the relevant Act or regulations.

ESV did not issue improvement notices in the 2014/15 reporting period.

##### **Infringement notices**

Infringement notices (or on-the-spot fines) can be issued for a selected range of offences against the GSA and are a lower cost alternative to prosecution for safety breaches.

The penalty for these types of offences is set at one-tenth of the maximum penalty prescribed in the Acts, which the recipient can elect to either pay within a set period or not pay and have the matter heard in court.

ESV issued five infringement notices in the 2014/15 reporting period.

##### **Official warnings**

An official warning (pursuant to the Infringements Act) can be issued as an alternative to an infringement notice or a warning letter (for offences that can be dealt with by infringement notice). An official warning can also be given as an attachment to a more detailed ESV warning letter.

Official warnings outline a breach, instruct the person or organisation to comply in the future, and warn about further enforcement action if there is a failure to comply.

ESV issued three warning letters for unauthorised encroachment within three metres of a licenced pipeline in the 2014/15 reporting period.

##### **Prohibition notices**

Prohibition notices are only issued when there is an immediate (or likely immediate) and serious risk to health and safety (or to the environment under the Pipelines Act).

ESV did not issue any Prohibition notices in the 2014/15 reporting period.

### **Directions**

The Director of Energy Safety has the power to issue written directions to people or businesses to take particular actions to address safety issues.

At any time, ESV may require the complete revision of a Safety Case or it may determine and impose a gas company's Safety Case. This is a last-resort power enabling ESV to ensure network safety and continuity of supply to the community, and has the potential to be a more severe sanction than prosecution.

The Director of Energy Safety did not issue any directions in the 2014/15 reporting period.

### **3.2.5. Prosecute**

Prosecution usually occurs when there is significant risk or harm has actually occurred and can stem from any of the provisions applying to regulated entities.

ESV did not prosecute any regulated entities or infringing parties during the 2014/15 reporting period.

## 4. Appendix A

### 4.1. Terms and abbreviations

Terms and Abbreviations	Meaning
3m works	Works undertaken within three metres of a pipeline
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ALARP	As low as reasonably practicable
APGA	Australian Pipelines and Gas Association
AS	Australian Standard/s
Cathodic protection	A technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell
Cathodic protection system	An electrical means of mitigating corrosion on buried and submerged metallic structures (primarily steel)
Conditions of Works	A specific requirement issued by a pipeline licensee to an external party prior to its proposed works in the vicinity of the pipeline to ensure the safe and reasonable protection of the licensee's asset. Conditions of Works detail the conditions under which work may be undertaken, and are provided by licensees to third parties in response to a Dial Before You Dig enquiry
CP	Cathodic protection
DCVG	Direct Current Voltage Gradient
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
GEMCF	Gas Emergency Management Consultative Forum (transmission consultative committee)
GSA	Gas Safety Act
LNG	Liquefied natural gas
Location classes (T1 and T2)	Urban location classes, T1 involves suburban areas and T2 involves multi-storey areas or large commercial centres

Terms and Abbreviations	Meaning
LPG	Liquefied petroleum gas
MAOP	Maximum allowable operating pressure
MPA	Metropolitan Planning Authority
MAV	Municipal Association of Victoria
NDT	Non-destructive testing
PA	Pipelines Act
Point of loss of control	The point at which a regulated entity no longer has any means to prevent an incident occurring, although it may still be in a position to mitigate the consequences
SMS	Safety management study
Threat barriers	Physical and procedural barriers to injury or damage to people, property, and the environment. This includes barriers between a possible threat and the point of loss of control (precautionary barriers), and barriers between the point of loss of control and potential outcomes (mitigation barriers)