



AusNet Gas Services Pty Ltd

Gas Access Arrangement Review 2018–2022

Appendix 6C: Gas Safety Case Summary

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Gas Safety Case

Summary

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ISSUE/AMENDMENT STATUS

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Forward

This document has been prepared by SP AusNet for the sole purpose of demonstrating compliance with the *Gas Safety Act* and the *Gas Safety (Safety Case) Regulations* with the objective that SP AusNet will manage the gas distribution network and provide consumers with an efficient, safe and reliable gas supply.

The information contained in this document might not be appropriate for all persons and it not possible for SP AusNet to have regard to the particular needs of each person who reads or uses this document.

The information contained in this document is subject to review and SP AusNet may amend this document at any time. Amendments will be indicated in the Amendment Table, but SP AusNet does not undertake to keep the reader informed unless by separate arrangements.

Contact

This document is the responsibility of Gas Asset Management – Network Strategy and Development Division, SP AusNet. Please contact the indicated owner of the document with any inquiries.

Network Strategy and Development, SP AusNet
Level 31, 2 Southbank Boulevard
Melbourne Victoria 3006
Ph: (03) 9695 6000

Endorsement by (original signed):

Asset Manager, Gas Networks
Date:

Charles Popple
Group General Manager
Date:

Nino Ficca
Managing Director
Date:

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Gas Safety Case Summary

1 BACKGROUND AND OVERVIEW

SP AusNet represents one of three distribution businesses, which operate the Victorian gas networks under licence from the Essential Services Commission (ESC). The role of the three distribution businesses is to manage the gas distribution network and provide consumers with an efficient, safe and reliable gas supply.

To ensure the safety of the gas industry in Victoria, Energy Safe Victoria has been set up by the State Government of Victoria. To achieve this, ESV employs a 'Gas Safety Case' regime. The Gas Safety Case is a statutory requirement under the *Gas Safety Act 1997* and the *Gas Safety (Safety Case) Regulations 2009 No.6*. The objectives of these regulations are to make provision for safety cases in relation to facilities, gas installations and appliances and to provide for the reporting of gas incidents.

This Gas Safety Case Summary is an overview, for public dissemination, of the key aspects of SP AusNet's Gas Safety Case submitted to ESV. In accordance with the requirements of Safety Case, this summary is represented in three key parts:

- Facility Description - overview of the SP AusNet transmission, distribution and alpine resort facilities and operations
- Formal Safety Assessment – risk identification, modelling and control measures
- Safety Management System - means by which SP AusNet manages risks identified in the Formal Safety Assessment

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2 FACILITY DESCRIPTION

A Safety Case must contain a facility description in sufficient detail to enable the extent and scope of assets and operations of the gas company. This section presents an overview of the facility description presented as part of the Safety Case.

2.1 Geographic Footprint

As of 31 December 2007, SP AusNet delivers gas to over 551,000 plus customers across a geographically diverse region spanning 60,000 square kilometres - servicing the western half of Victoria, from the Hume Highway in metropolitan Melbourne west to the South Australian border and from just north of Bendigo and Horsham south to the coast.

SP AusNet's geographic coverage is illustrated in the Figure 1 map.



Figure 1: SP AusNet gas distribution in Victoria

2.2 Assets and Operations

SP AusNet owns, operates and maintains gas transmission pipelines (including mainline valves, associated city gates, and field regulators) and an extensive gas distribution network across its geographic footprint. In addition, SP AusNet owns and operates a small LP gas reticulation network at the alpine resort of Mt Baw Baw.

The SP AusNet network includes 183 km of transmission pipeline, 9,282 km of distribution mains, 523,542 services, 551,097 meters, 36 City Gates, 101 field regulators and 120 district regulators.

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The distribution network assets are summarised in Table 2-1.

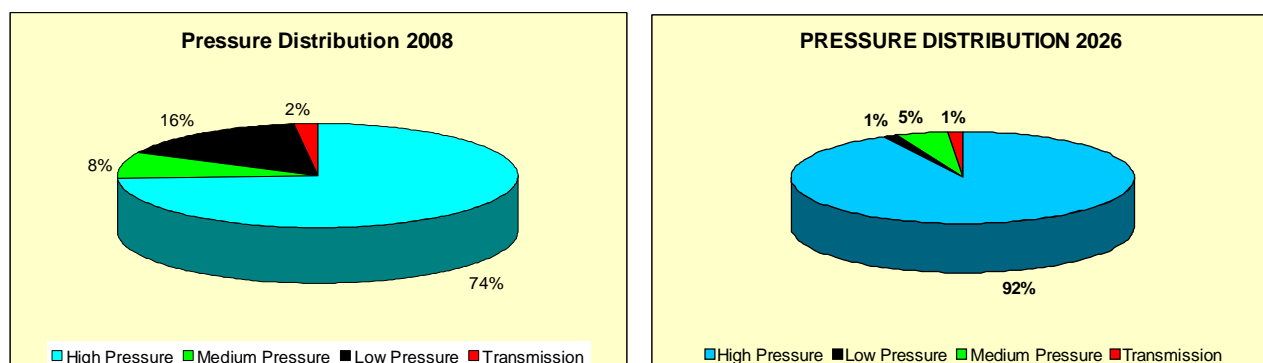
Table 2-1: Distribution Network Assets

Asset Group	Number or Length (at 31/12/08)
Transmission pipelines: • Licensed TP (above 1,050 kPa)	183km
Mains	9,282 km
Services (approx)	523,542
Domestic meters	535,502
Non domestic meters	15,595
City Gates	36
Field regulators	101
District regulators	120
SCADA (remote terminal units)	171

SP AusNet's long-term plan is to upgrade the distribution system from low-pressure to a high-pressure to improve reliability. At present, approximately 74% of the distribution mains operate at high pressure (515kPa, 700kPa or 900kPa), 8% operate at medium pressure (80 kPa), 16% at low pressure (3 kPa) and 2% operates at transmission pressure (>1,050 kPa). This will change to 92% high pressure and 1% low pressure by 2026.

The current and future distribution system, according to the pressure categories, is provided in Figure 2-1 showing the proportions of the pressure systems.

Figure 2-1: Current and Future Distribution System Comparison



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3 FORMAL SAFETY ASSESSMENT

A Safety Case must contain a Formal Safety Assessment (FSA) in order to assess risks associated with the network including a description of the methodology, identification of hazards, risk assessment, and measures to reduce the risk. This section presents an overview of the FSA presented as part of the Safety Case.

3.1 Assessed Network Functions

SP AusNet's FSA covers the following key physical network assets:

- Pressure regulation
- Transportation (Mains, Services & related assets)
- Monitoring systems
- Metering systems
- Risk mitigation systems

Risks associated with functions other than physical network assets are also evaluated by SP AusNet as an integral part of network operation including:

- | | |
|---|------------------------------------|
| • Access control | • Emergency response capability |
| • Accredited laboratory facilities | • Forecasting |
| • Asset management | • Gas-specific equipment readiness |
| • Call despatching function | • Integrity of system databases |
| • Competencies | • Interfaces |
| • Design, construction, installation, commissioning and decommissioning | • Organisation |
| • Gas quality & specification | • Third-party asset damage |
| | • Environmental conditions |

3.2 Assessment Methodology

SP AusNet's FSA establishes the basic nature of risks and ranks them in order of significance using failure experience data from within SP AusNet and other relevant industry sources. The preconditions, mechanisms, outcomes and consequences for the gas network are mapped on the basis that in every case the 'event' is a 'gas incident' where control over flow of gas has been lost or nearly lost.

From the FSA, control measures for design, commissioning, inspection, maintenance, operation, environment, training and management are embedded in mature systems as procedures, internal standards and manuals that are compliant with AS/NZS ISO 9001, AS/NZS ISO 14001, and AS/NZS 4801 standards.

As of 2007 SP AusNet has adopted a business wide risk methodology based upon the AS/NZ 4360:2004, Risk Management Standard and the Committee Draft of ISO 31000 "Risk management – Guidelines on principles and implementation of risk management", 2007.

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3.3 Assessment Results

In its formal Safety Case to ESV, SP AusNet provides an extensive detailed report of the hazards identified, the risk (including likelihood and consequences), and measures taken to reduce that risk.

As a very brief summary, the risk assessment of the gas network identified a number of higher ranking risks facing SP AusNet over the 2008 period. These risks include:

- Data Integrity
- Availability of Equipment for Emergency
- Natural Gas – Contaminated Gas (Oil etc.)
- Resources and competencies

Data integrity has been identified as a risk as loss, corruption or ineffective input of asset data could lead to significant network modelling impairment or legal action from a customer or 3rd party. Further work in 2009 with respect to exception reporting of inaccurate data entry will continue to improve the rating of this risk.

The availability of emergency equipment for an emergency has been identified as a risk as a repair delay could result in risk to public and personnel. The increased score relating to this risk is driven by a need to improve PE100 HP2 squeeze off capabilities. During 2009 further review of available equipment will be undertaken.

Contaminated gas and specifically oil has been identified as a risk due to the potential loss of customer supply. A program for the treatment of oil in gas has been underway throughout 2008 and further monitoring of strategic locations will continue to occur in 2009.

Resources and competencies has been identified as a risk as insufficient resource or skill can affect safety of assets. Improvement in retention, cross skilling as well as ease and speed of recruitment will ensure continued improvement in this area.

The full analysis is given in the formal Gas Safety Case.

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4 SAFETY MANAGEMENT SYSTEM

A Safety Case must specify a Safety Management System (SMS) to be followed in relation to the facility, the contents of which are prescribed within the Gas Safety Case Regulations. This section presents an overview of the SMS presented as part of the Safety Case.

4.1 Frameworks

4.1.1 Safety Management System

SP AusNet operates under corporate quality; safety and environment principles and mature management systems accredited to AS/NZS ISO 9001, AS/NZS ISO 14001 and AS/NZS 4801 standards.

The Safety Management System (SMS) is a component of that overall framework describing the means by which SP AusNet manages asset risks identified in the FSA. The SMS consists of procedures, which in turn address all regulated requirements of the *Gas Safety Act 1997*. These procedures give high-level descriptions of control measures for risks identified in the FSA. Further reference is made within procedures to more detailed system documents, which are the intellectual property of SP AusNet.

The high-level SMS procedures are as follows:

Procedure Number	Title
QMS 20-06	Design Management
QMS 20-02	Records management
QMS 20-04	Document & Data Control
QMS 21-01	Contractor Accreditation Guidelines
QMS-21-11	Technical Compliance Audit Strategy
RM-001-2006	Risk Management Framework
EMS 11-02	SP AusNet Gas Environmental Management Plan
TBA	SP AusNet Annual Regulator Schedule
10-1031	SP AusNet Learning, Development & Training Policy
TS 0503	Gas incident reporting
AMP 30-01	SP AusNet Gas Maintenance Plan
30-4006	SPIRACS (Integrated Response and Contingency System)
33-2005	Gas Odour Monitoring
30-1010	Gas Construction & Maintenance Competency Guidelines
AMP 30-01	SP AusNet 5 Year Asset Management Plan
30-2631	Safety KPI reporting
30-2633	Gas supply to a safe installation
AMP 30-03	SP AusNet Pipeline Integrity Management Plan
30-4006-13	SP AusNet Corporate Security Policy
33-2008	Gas Work permit and Notification Process
33-2001	Gas Network Control and Monitoring

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4.1.2 Published Technical Standards

The Safety Management System for a facility must specify all published technical standards regarding the design, construction, installation, operation, maintenance, decommissioning and disposal of the facility.

These published technical standards are as follows:

Standard Number	Title
AS 1596	The storage and handling of LP Gas
AS 1697	Installation and maintenance of steel pipe systems for gas
AS 1742	Manual of uniform traffic control devices
AS 2032	Code of practice for installation of UPVC pipe systems
AS 2033	Installation of polyethylene pipe systems
AS/NZS 2381	Electrical equipment for explosive gas atmospheres
AS 2430	Classification of hazardous areas
AS 2832	Cathodic protection of metals – Pipes and cables
AS 2885	Pipelines
AS 3000	Electrical installations
AS 3723	Installation and maintenance of plastics pipe systems for gas
AS 4041	Pressure piping
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
AS/NZS 3931	Risk Analysis of Technological Systems – Application Guide
AS/NZS 4360	Risk Management
AS 4564	Specification for general purpose natural gas
AS 4568	Preparation of a safety and operating plan for gas networks
AS 4645	Gas distribution network management
AS 4647	Domestic diaphragm gas meters
AS/NZS 4944	Gas meters – In-service compliance testing
AS 5601	Gas installations

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4.1.3 SP AusNet Technical Standards

The Safety Management System for a facility must specify all internal technical standards regarding the design, construction, installation, operation, maintenance, decommissioning and disposal of the facility.

These internal technical standards are as follows:

Standard No.	Title
TS0500	Staff Participation in Committee and Drafting Work of Standards Aust and AGA
TS0501	Gas Specific Materials and New Technologies Approval Process
TS0501F01	Field Evaluation Report
TS0501F02	Submission for Material Approval
TS0501F03	Request for Laboratory Report
TS0503	Gas Incident Reporting
TS0503	Industrial Commercial Fitting Line Recommissioning
TS0506	MOCS Protocol and Procedure
TS0511	Refurbished Appliances (Type A)
TS1300	Site Drainage
TS1301	Prevention of Soil Erosion
TS1302	Trade Waste and Effluent Discharge
TS1305	Design of Pits – Vaults and Kiosks
TS1308	Construction of Site Works for Industrial & Commercial Metering/Regulating Installations – LP/MP/HP Inlet Pressures
TS2601	Field Recording of Special Crossings
TS2606	Distance and Angular Measurement Accuracies
TS2607	Conditions for works near Gas Transmission Pipelines and Mains
TS2607 Part 1	Conditions for works near Gas Mains and Infrastructure
TS2607 Part 2	Conditions for works near Gas Transmission Pipelines
TS2607 Part 3	Conditions for the Use of Explosives near Gas Transmission Pipelines and Mains
TS2612	Procedure for identifying the need for an easement for reticulation mains
TS2613	Recording of Pipelines & Mains Information on Record Plans
TS2614	Drawing Number System
TS2615	Policy – Signatory Requirements For Gas Engineering Drawings
TS2901	Earthing of Vessels and Holders
TS2902	Earthing of Tanker Transfer Points
TS2905	Policy – Classification of Hazardous Locations
TS4000	City High Pressure System (Design and Construction)
TS4001	Design Guide for Gas Pipework on Bridge Crossings up to 1050kPa
TS4004	Policy on Valves in Systems operating at <1050Kpa
TS4005	Design Temperatures for System Components
TS4011	Service Valves – High Pressure DN15 to DN20 (Internal Inlet Thread – External Outlet Thread)
TS4014	Service Valves (HP) – DN20 Internal Threads
TS4037	The Permanent use of Stainless Steel Repair Clamps
TS4061	Internal Lining of Pipe – HP
TS4062	Land Conservation and Pipework

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TS4063	Policy on Valve Security
TS4065	Design of Sensing Lines and Bleed Valve Connections
TS4066	Field Recording of Assets
TS4067	Management of Major Transmission and Distribution Projects
TS4069	Policy – PE 100 Pipe and Fittings
TS4070	Storage of Polyethylene Coated Pipe – Stock Rotation
TS4071	Buried Plastic Pipe – Marker Tape and Tracer Wire Detection
TS4072	Flanged Joints
TS4073	Colour Code for Valve and Syphon Covers
TS4074	Site Selection for District and Field Regulators
TS4075	Consumer Piping Systems – Operating Pressure Exceeding 515kPa
TS4077	Design Life of Gas Transmission and Distribution Systems
TS4078	Management of Transmission Pipeline Easements
TS4078F01	Application for Permission to Erect Fencing/Obstruction across/on Gas Transmission Pipeline Easement
TS4079	Design of Pressure Regulating Installations with Inlet Pressures Between 7kPa and 10 000 kPa
TS4081	Storage, handling and transport of pipe
TS4082	Selection of Components and Materials (Transmission and Distribution Systems)
TS4084	Abandoning or Removing of Buried Distribution Mains and Services
TS4090	Purging for Commissioning of Transmission and Distribution Pipe
TS4092	Plant Design (Consideration of OH&S Legislation)
TS4093	Noise Control for Transmission and Distribution Systems
TS4098	TS4098 Design Pressure Regulations with Inlet Pressures between 7 kPa and 10 000 kPa
TS4099	Depth of Cover to Underground Assets
TS4101	Consumer Piping Systems – Operating Pressure Exceeding 200 kPa but not exceeding 515 kPa
TS4102	Design and Construction of Large Diameter PE Pipe
TS4103	Safety Assessment for Distribution Mains and Services
TS4104	Polyethylene for Gas Pipes
TS4107	Inspection and Repair of Damaged Steel Pipelines
TS4115	Pre-Commissioning Treatment of Gas Pipelines
TS4116	Natural Gas Odourisation
TS4117	Configuration Management (Technical)
TS4121	Approved Welding Procedures – Transmission
TS4127	Distribution Mains and Services
TS4130	Glossary of Terms for the Gas Grid
TS4132	PE Pipe Insertion
TS4135	Construction of Industrial and Commercial Metering Regulating Installations (LP HP Inlet Pressure)
TS4136	Directional Boring of Mains
TS4137	Domestic Regulator Freezing Protection
TS4142	Portable Gas Detector Calibration Intervals
TS4143	Safety Shut-Off Valves in Fire Alarm Systems
TS4147	Location of Underground Services
TS4148	Policy for Plastic Pipe Joint Systems
TS4149	Quality Assurance Process for Designated Materials
TS4153	Materials Management Systems – Gas Grid Critical Materials

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TS4156	Vegetation and Planting of Trees near Gas Mains, Compounds & Licensed Transmission Pipelines
TS4158	Approved Welding Procedures – Distribution
TS4163	Inspection of HP2 Distribution Mains
TS4164	Transmission Pipeline Inspection
TS4164	01 Transmission Pipeline Inspection Checklist
TS4165	Internal Gas Services Installations
TS4290	Removal of Decommissioned Regulator Installations Above and Below Ground
TS4303	Standard Metering Pressures - Industrial and Commercial
TS4306	Requesting Inline MK1
TS4318	Authorised Meter Inspectors
TS4320	Testing Metering Pressure - Industrial and Commercial
TS4340	Calculating Inline Instruments MHQ and MDQ1
TS4343	Access to Regulator and Valve Installations
TS4349	Site Selection - Industrial and Commercial Metering Stations
TS4350	Guide for Selecting and Specifying Standard Dual-Run Regulator Units
TS4350-A	Service size maximum load capacity
TS4350-B	Selection charts
TS4350-C	Selection guides
TS4351	Selecting and Specifying Single Run Regulator Units
	Selecting and Specifying Single Run Regulator Units - Service Size Minimum Load Capacity
TS4351-A	
TS4351-B	Selecting and Specifying Single Run Regulator Units - Selection Charts
	Selecting and Specifying Single Run Regulator Units - Spring and Orifice Selection Guide
TS4351-C	
TS4351F01	Selecting and Specifying Single Run Regulator Units - Meter - Instrument Request
TS4352	Gas Meter Location - Single Occupancy Domestic Premises
TS4353	Domestic Meter Diversification and Selection
TS4355	Metering Pressure for Domestic Billing Meter
TS4356	Metering Rooms
TS5201	Leakage Management
TS6303	Ducted Central Heating Systems
TS6304	Pipework Blowdown and Gas Flaring - Transmission
TS6600	Security Fencing (General Security)
TS6601	Security Fencing (Inner High Security)
TS7401	Preparing Engineering Standards
TS7600	Pressure Classifications and Operating Pressure Ranges
TS7601	Maintaining Gas Supply during TP Pipeline Blowdown Operations
TS7900	Policy on Valves in a TP System
TS7955	Assessment and Repair of Damage to Transmission Pipelines
TS7960	Renewal of Pipeline Permits - Licences
	Procedure for Permission / Rejection of Works within 3 metres of an SP AusNet Licensed Transmission Pipeline
TS7962	

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4.1.4 Health and Safety Policy

SP AusNet's Health and Safety Policy embraces all safety matters, including those relating to Safety Case.

SP AusNet Health and Safety Policy

SP AusNet is committed to providing a safe and healthy working environment for all while delivering energy across our electricity and gas transmission and distribution networks.

To achieve this, the commitment and contribution of each and every employee is required to maintain, so far as is practical, a working environment that is safe and without risk to health. We will do this through:

- Taking responsibility for the health and safety of ourselves and our fellow workmates in all of our activities aiming to eliminate work-related injury and illness.*
- Not compromising personal health and safety in the mistaken belief that other requirements are more important.*
- Placing people first, then plant safety and system performance followed by other issues.*
- The identification, assessment and control of workplace risks and hazards*
- Complying with all regulatory and legislative requirements, Industry Codes and relevant Australian Standards.*

SP AusNet fosters this safe work environment by:

- Implementing and maintaining an effective Health and Safety Management System with commitment and involvement from all levels of the organisation*
- Ensuring that there is a systematic identification of hazards and there is assessment and control of risks associated with those hazards*
- Providing appropriate education and training*
- Systemic planning and control of workplace activities and the establishment of measurable objectives and targets.*
- The provision of appropriate facilities, plant, equipment and supervision*

SP AusNet will also ensure that contractors, suppliers and co-venturers apply similarly high standards.

SP AusNet will facilitate continuous improvement in our Health and Safety performance by periodic reviews of objectives and targets and regular and rigorous monitoring and analysis of performance. Health and safety considerations will be taken into account in all our business decisions.

Nino Ficca
MANAGING DIRECTOR

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4.1.5 Asset Management Policy



Asset Management Policy

SP AusNet's asset management vision is to be a "leader in the asset management of energy networks". Our asset management mission is to "deliver energy and associated services, safely, reliably and to enhance the lives of our customers and employees in a sustainable manner".

The SP AusNet asset management policy supports our asset management vision and mission by providing the framework for delivering the design, construction, operation, maintenance and retirement of energy networks in an efficient manner which:

- Delivers sustainable outcomes for safety and network performance
- Informs and supports the business plan
- Sets the direction for the asset management strategy
- Complies with regulatory and legislative requirements, industry Codes and relevant Australian Standards

To achieve this, we will:

- Develop and maintain effective Asset Management Systems with commitment, accountability and involvement from all of the organisation
- Use our risk management framework to systematically identify hazards and assess and control the risks associated with those hazards
- Understand and respond to our customers' requirements
- Use our skills and expertise to continually improve the quality of our service
- Recruit, train and develop staff to effectively manage our assets in a sustainable way
- Ensure appropriate facilities, plant, equipment and supervision
- Utilise effective work planning and control
- Apply a life cycle approach to asset management
- Innovate, create and employ leading asset management practices
- Continuously improve our Asset Management effectiveness,
- Benchmark our processes and practices
- Review objectives and targets and conduct regular and rigorous monitoring, auditing and analysis of economic and technical performance.

SP AusNet will ensure that contractors, suppliers and partners apply similarly high standards.

Asset management is complementary to achieving safe, reliable, and sustainable, energy network services.


Nino Ficca
MANAGING DIRECTOR

April 2008

SP Electricity Pty Ltd ABN 91 064 651 118
A subsidiary of SP Australia Networks (Distribution) Ltd
Level 31, 2 Southbank Boulevard Southbank Victoria 3006 Australia Locked Bag 14051 Melbourne City Mail Centre Victoria 8001 Australia
Tel 61 3 9595 6000 Fax 61 3 9595 5555 www.sp-ausnet.com.au



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4.2 Responsibilities for Facilities and the Safety Case

SP AusNet recognises that successful implementation of the Safety Case requires adequate resourcing and a coordinated effort across the whole organisation. Accordingly, SP AusNet has detailed formal organisation charts and delegations of authority, which explicitly define organisational responsibilities, position descriptions, and authorities for the network and the business as a whole. SP AusNet Organisational Charts can be accessed on the company Intranet.

The key positions, as required in the Safety Case, responsible for the safe operation of the facilities and the preparation and submission of the Safety Case are as follows:

- **Person responsible for operation of facility**

Managing Director

Level 31, 2 Southbank Boulevard

Southbank Vic 3006

Australia

- **Person responsible for safety case**

Asset Manager, Gas Network

Level 31, 2 Southbank Boulevard

Southbank Vic 3006

Australia

4.3 Design/Modification, Construction, Installation, Operation, and Maintenance

4.3.1 Design / Modification

The network design function is divided into three major categories as follows:

- **Network overall/system design** - incorporates the high-level, strategic design of the network and takes consideration of elements such as future load growth, interconnection asset capacity, major customer developments and overall network performance issues including reliability and security.
- **Complex designs** - incorporates the design of complex facilities such as field regulator stations. It typically involves site-specific designs and focuses on the design considerations and risk assessments associated with the asset concerned.
- **Standard designs** - involves the application of standard network designs, documented design standards, procedures and principles to a range of less complex assets. Such design works typically incorporate mains replacement and reticulation extensions work and are undertaken on an as-needs basis (ie. for specific projects). The designs are carried out in accordance with design standards, procedures and principles developed and specified by SP AusNet.

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Complex and standard design work is undertaken by contracted, specialist service providers under the terms of either specific individual contracts, turnkey type contracts for an entire facility, or a combination of both. Design activities are managed according to the principles of AS/NZS ISO 9001. All designs, whether performed by an external service provider or by SP AusNet are risk-assessed, reviewed, verified and accepted in accordance with specified procedures and SP AusNet Technical Standards. Commissioning and testing (design validation) is carried out to confirm every aspect of the end product conforms to the project brief and specification. All test results must be recorded and filed with the project records.

4.3.2 Construction

Construction activities are divided into two major categories, general or complex, according to the nature and complexity of the work to be undertaken:

- **General construction** - involve the application of SP AusNet standards, documented procedures, SP AusNet or industry-accepted equipment and materials for the construction of an asset to a standard design. Such works typically include mains and services reticulation work and are generally undertaken by a contractor on behalf of SP AusNet.
- **Complex construction** - encompass installations of a unique nature and incorporate non-standard items of plant and/or equipment. Such installations typically include city gates, field regulators and transmission pipelines. Construction of such installations typically incorporates a range of different activities such as civil works, structural works, construction and commissioning etc.

In addition to new assets, asset renewals are major work that restores, rehabilitates, replaces or renews an existing asset to its original or improved capacity. Factors driving these activities are the safety of the entire network, reliability of supply, compliance with performance requirements, and reduced maintenance costs. The main activities in this area are the pipe renewal and meter replacement programs.

SP AusNet manages construction and commissioning of new assets and renewals through a panel of approved contractors who have demonstrated appropriate skills and methods and include the supply of labour and material for the various type of work. All network construction activities are undertaken in accordance with specified standards (both industry and SP AusNet).

SP AusNet audits the work to ensure that approved construction standards, techniques and methodologies are observed and that material used is as per SP AusNet specifications. All assets are tested to ensure that they have been constructed and are working as per the design. SP AusNet manages the commissioning and is conducted using the appropriate legislative requirements and SP AusNet's engineering standards.

4.3.3 New Customer Connection

New customer connection activities are divided into three major categories:

- **New Installation** - The process for connecting gas supply to a new installation is initiated by the customer or representative (builder, plumber or owner) requesting the gas retailer to provide a connection. The retailer conveys the request to SP AusNet for processing in accordance with specified procedures. SP AusNet forwards instructions to its contractor, which plans and lays a new service in accordance with those procedures.
- **Meter fixes** - are gas meter installation and connection to the gas service pipe, prior to connection of the meter outlet to consumer piping. The customer contacts their chosen

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retailer who forwards the meter fix as a service order to the SP AusNet Call Centre who in turn updates the meter fix details and installation classification to the order. For standard installations, the customer arranges for a plumber to remove the plug and commission the new gas installation. Complex installations are commissioned by the coordinated actions of SP AusNet's contractor and the installing plumber.

- **Emergency Plumbing Order** - In accordance with the *Building Act (1993)*, the Plumbing Industry Commission may issue an emergency plumbing order if an installation is non-compliant or if there is an immediate safety risk. SP AusNet advises its contractor to isolate supply and to advise the owner or consumer of corrective action required to be carried out by a registered gasfitter before supply is restored.

Prior to fitting any meter, SP AusNet's contractor ensures that the plumber's submitted Certificate of Compliance or ESV approval is appropriate for the installation type and that it complies with the *Gas Safety Act* and *Gas Safety (Gas Installation) Regulations*. Upon advice that the emergency corrective action has taken place, SP AusNet's contractor arranges a safety inspection before supply is restored and SP AusNet requires Certificate of Compliance as verification.

4.3.4 Operations

Operations are the day-to-day management of the network necessary to monitor and control network pressures to ensure reliability of supply and other operating requirements are met, as well as responding to faults and emergencies.

A SCADA system is used to monitor and control the operation of SP AusNet assets including transmission, high and medium pressure systems. It operates 24 hours per day, 7 days per week, from the SP AusNet Customer Emergency Operations Team (CEOT) and comprises three elements; remote telemetry units, a radio system and a host computer system.

The system consists of controlled sites, monitored sites and fringes (further described in section 4.5 Safety Case Control Systems):

- **Controlled sites** - either the SCADA or the operator remotely controls the outlet pressure.
- **Monitored sites** - outlet pressure is set by field personnel and the SCADA monitors performance.
- **Fringe** - is the lowest pressure point in a controlled system; it is used to monitor the pressure at the extremity of a controlled system.

The SCADA provides data on the real-time performance of the assets as well as data for long-term evaluation of gas demand and for network modelling to demonstrate potential system deficiencies. SCADA is also critical for the effective response to emergencies and is integral to real-time management of the network. SP AusNet is expanding the network of monitors to ensure effective operating coverage of the systems and delivery of appropriate volumes of gas. Additional SCADA assets will also be required to achieve the same levels of service as the network grows.

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To ensure that the functional integrity of the network is maintained at all times, and to provide historical data for reliability centred maintenance studies, approved contractors in undertake numerous testing activities. Such testing includes:

- **Diagnostic Testing** -system elements that fail during service are investigated and recorded. Where the failure mode is not evident, diagnostic testing occurs to determine the failure mode and the subsequent remedial action required.
- **Condition Testing**- performed on a range of assets to provide an assessment of asset performance and deterioration.
- **Maintenance Testing** - performed on a range of assets to confirm that the mechanical operation or functionality of the asset will perform as intended. Assets identified as requiring immediate maintenance or earlier replacement are elevated within the maintenance or asset replacement program according to SP AusNet's maintenance guidelines or a risk assessment of the asset.

Other key operational activities in the safe operation of the facility include:

- **Short Term Instructions** – an established process for ensuring that the Networks Control Centre has up to date information that is approved for use and upon which gas distribution operation and control decisions can be made.
- **Operational Bulletins** - are used to communicate information and matters of an operational nature to Operations Officers and other relevant staff.
- **Operator Functions Log** - used to record all operating changes (e.g. site pressure location, pressure changes, mode of control) and times the changes are made. .
- **Operations Desk Log**- records what occurs in relation to gas operations in the Networks Control centre. All telephone calls and key events are recorded in this log.

Operations concerning faults and emergencies are addressed in section 4.8.2 and 4.5.4 respectively.

4.3.5 Maintenance (including gas critical equipment)

SP AusNet categorises its maintenance into the following:

- **Unplanned maintenance** - Work carried out in response to reported problems or defects (e.g. pipe failure causing leakage, mechanical failure). The aim of this maintenance is to provide speedy, appropriate and effective response to unforeseen equipment or system breakdown, and minimise interruption and /or inconvenience to the customer.
- **Condition maintenance** - Work carried out to a predetermined frequency (e.g. inspection of cathodic protection systems, leakage surveys, checking access to valves). The aim of this maintenance is to ensure that plant and equipment operate reliably and economically, and to perform a series of operating inspections and checks at regular prescribed intervals, as the first part of a preventive maintenance program.
- **Scheduled maintenance** - Work carried out to a predetermined schedule (e.g. regulator overhaul for City Gates, Field & District Regulators, lubrication of valves). The aim of this maintenance is to perform routine major maintenance at preselected intervals to maximise equipment life and minimise the possibility of interruption of supply to the customer, whilst maintaining costs at an optimum level in accordance with best practice

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- **Site management** - The aim of this maintenance is to keep the site in a clean, functional, safe and visually acceptable condition. This includes activities such as repair of site fences; painting of buildings, pipework and equipment; cutting of grass to minimise fire hazards; pruning of trees; cleaning and housekeeping; and any other functions, which impact the physical environment.

Maintenance and inspection activities are broadly divided into the following asset categories as well:

- **Meter Maintenance** - Domestic meters are part of a changeover program currently replacing 'time expired' meters at 15-year intervals. A field life extension program is in place where a percentage of meters are tested each year. Where tested meters are found to be operating within specification, a risk assessment is made to determine whether the remainder of that meter type may be left in the field for a further 12 months. Industrial/ Commercial type meters are changed every 10 years. Due to recent amendments to AS 4944, new domestic meters have the ability dependent on accuracy to achieve an in field compliance period of 18 years, whilst existing meters have the ability to achieve field life extension of an additional 5 years rather than the previous 1 year extension.
- **Regulator Maintenance** - SP AusNet has a range of pressure regulating stations. It includes City Gates, field regulators, district regulators, industrial / commercial units and domestic regulators. The larger regulator types are subject to preventative maintenance and are inspected on industry accepted maintenance periods.
- **Pipes (TP and distribution)** - For transmission pipelines, one full and one intermediate survey are conducted per year where the effect of stray current is monitored. Survey outcomes are reported to appropriate authorities. For the steel distribution network testing frequencies vary between one and two surveys per year. Pipeline surveys are conducted within five years of the licence renewal date and at intervals approved by the Dept of Natural Resources. The surveys demonstrate that the integrity of the pipe satisfies AS 2885. Leakage surveys are undertaken in accordance with both SP AusNet and industry standards. Pipeline patrols are conducted on a regular basis covering pipeline inspection, pipeline easement and marker maintenance, referral to and from other authorities, 'Dial before you dig' system, property owner visits, hot spot risk identification. Each exposed pipe is typically visited either every year or every two years (dependent on risk assessment) for condition inspection. Valve maintenance for all accessible critical valves off the Distribution system is carried out every two years to check for leaks and access and every six years for operation and lubricant. Marker Post Maintenance is performed annually to distribution pipeline markers within the distribution system. Syphon maintenance, whereby problematic syphons are pumped of debris, is performed every 6 months or as required.
- **SCADA** - SCADA motor maintenance ensures that the electric motor and pilot regulator are working correctly and are dispensing the correct pressures. The SCADA motor is checked for operation at each regulator operational check and is completely overhauled at each regulator full maintenance check. SCADA transmitters and Remote Telemetry Units are calibrated 6 monthly and 12 monthly dependent on site type.
- **Gas Specific Equipment** - SP AusNet's Prime Service Provider owns specialist equipment for working on gas assets including equipment essential for emergency response. The equipment includes butt fusion kits, electrofusion control units, gas detectors of various types, and gas stop-off equipment. Regular maintenance is carried out in accordance with specific procedures with regard to the particular asset.

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Furthermore, to ensure the operational accuracy of the gas measurement and detection devices, a calibration program is in place for the following equipment groups:

- Gas flow measuring equipment;
 - Pressure measuring equipment;
 - Temperature, electrical and humidity measuring equipment; and
 - Gas detection equipment (fixed and portable).
- **Gas Critical Spares** – SP AusNet's Prime Service Provider ensures that spare parts for critical and non critical assets are on hand or are available through third party providers to ensure appropriate response related to asset failure or asset damage. These spares include items such as spare regulators or parts, stopple fittings, valves, repair clips and spare pipe.

The maintenance of all assets is undertaken according to requirements specified in SP AusNet's detailed maintenance program to ensure the functional integrity of the system is maintained at all time, that all plant and equipment operate reliably, economically and safely, that security of supply is maintained, and that the specified key performance indicators for security of supply, asset integrity and leakage survey are achieved. The program defines schedules and controls the work that is performed and provides a system of review, continuous updating and improvement. It is formulated annually based on reviews of the network's performance, including all relevant data.

SP AusNet uses Q4 for the programming, scheduling and reporting of all gas network maintenance activities. The results of the maintenance and inspection activities are recorded in Q4 and are held as part of the asset-specific historical data. Q4 also references generic and type-specific maintenance instructions for network plant.

4.4 Asset Management Plan

As a gas distributor, SP AusNet's core business is asset intensive. As such, effective and efficient management of its assets constitutes a primary business concern for SP AusNet.

SP AusNet operates to a documented gas Asset Management Plan (AMP) for the effective short and long-term management of its assets. The AMP, in the form of a directory that links various SP AusNet references (e.g. manuals, policies, standards, procedures and investment strategies), forms a consolidated plan, which underpins the Safety Case. It was developed using the methodology recommended in the International Infrastructure Management Manual (Australia / New Zealand Edition). Its implementation is undertaken through, and relies on, the application of the respective SP AusNet internal policies, standards and procedures identified in the Safety Case.

The key elements of the AMP are as follows:

- an analysis of the SP AusNet gas network demonstrating a sound knowledge of the physical assets and factors influencing their performance;
- an account of how SP AusNet performs its asset management functions introducing the SP AusNet business model, which covers inputs, outputs, core business processes and management functions;
- a business model description of: (1) outputs covering service levels including guaranteed service levels and KPIs agreed with the ESC; (2) inputs covering areas such as customer research, demand forecasts, regulatory requirements, corporate goals and

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activity costs; (3) core business processes covering the lifecycle approach to managing assets and how SP AusNet plans capital works programs, maintenance programs, renewal/replacement programs, runs its operations and manages disposals; and (4) management functions covering areas that support the core business processes such as IT, Finance, Regulatory, Network Performance, Engineering Strategy, Environmental and HR discussing each of these in some detail explaining how they are used together to ensure SP AusNet operates as a combined and effective unit; and

- an outline of the structure, resources and responsibilities within SP AusNet demonstrating the ability to manage a network of this size and complexity. Included in this section is an outline of the contract SP AusNet has with its key contractor, which is fundamental to providing performance improvements, and cost savings which benefit the stakeholders.

The AMP is reviewed annually as part of SP AusNet's business planning process. A formal review is carried out every 5 years as part of the Gas Distribution Access Arrangement submission. Furthermore, the AMP and AMP process has been externally benchmarked and found to be of a very high quality in all respects.

The ESC and ESV see the existence of an Asset Management Plan as evidence that the distribution businesses are not jeopardising the long-term safety and performance of the networks by running down the condition of the assets through under investment. The content of the AMP has been discussed with the ESV and recommendations for improvements have been addressed.

4.5 Safety Case Control Systems

Whilst SP AusNet has extensive control systems in place governing the operation and monitoring of the network (including pipeline systems monitoring and management, testing of materials, investigation of gas supply failures and faults, easement management and maintenance of gas-critical machinery and equipment), only those required by the Safety Case are addressed in this document.

The Safety Case requires the following to be addressed:

- Alarm systems
- Temperature and pressure control systems
- Emergency shut-down systems

4.5.1 Alarm systems

Four levels of gas pressure alarm (*low, low-low, high and high-high*) are active in the 171 SCADA-monitored network sites. At sites of significant pressure reduction (and therefore temperature drop), gas may require preheating and temperature is monitored for the extent to which it may affect the operation of downstream equipment; e.g. regulators. Status alarms are also monitored (e.g. valve position) at City Gates and some field regulator installations.

Alarm limits and conditions have been set on the SCADA system, which when triggered indicate abnormal conditions within the network. The limits and conditions and the required responses are set and reviewed by SP AusNet each summer following a review of the previous winter's performance and a forecast of the next peak period.

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4.5.2 Temperature and Pressure Control Systems

Maximum allowable operating pressures (MAOP) are based on sound engineering design and construction to ensure safety. Accordingly, the transmission and distribution networks are operated at the following pressures:

- Transmission pressure (TP) system is operated at a minimum of 1050 kPa to a MAOP of 2,800 kPa.
- The High Pressure 2 system consists of pipe operating at pressures between 450 kPa and 1050 kPa.
- The majority of high pressure (HP) distribution systems are operated from 450 kPa to a minimum allowable pressure of 140 kPa. The minimum is based on the minimum operating pressure required to maintain a secure supply for the system's industrial consumers.
- The medium pressure (MP) distribution system pressure range of 7 to 140 kPa is subdivided into 3 smaller pressure ranges.
- Low pressure (LP) systems operate up to 7 kPa but generally in the range of 3.2 and 1.5 kPa - between 3.2 kPa and 2.5 kPa at peak times and between 2.1 and 1.8 kPa at non-peak times.

Monitoring and control of gas pressures is conducted either by means of the SCADA or manually set pressure control units. The SCADA system uses remote terminal units to monitor and/or control the operation of the entire transmission and high-pressure distribution systems. It provides information used to maximise operational efficiency of the gas pipe network and manage gas flows during routine and unplanned operations. The SCADA provides data on the real-time performance of the assets as well as data for long-term evaluation of gas demand and for network modelling to demonstrate potential system deficiencies. SCADA is also critical for the effective response to emergencies and is integral to real-time management of the network.

Pressure control is currently only available in the high-pressure parts of the network, by using fringe set point control. Each fringe monitoring point has a set point profile assigned that varies depending on time of day and time of year. The fringe point pressure is then controlled within the assigned set point by varying the outlet pressure of the associated field regulators. SP AusNet currently monitors fringe point pressures at 26 strategic locations to ensure that the regulating station(s) supplying gas to those networks are performing satisfactorily. The fringe point alarms act as an early warning system that the pressure in that system has gone outside of design limit.

SP AusNet has 36 City Gate regulator installations of which 27 have gas heaters installed. Generally these heaters are installed in order to counter the Joule – Thompson effect that occurs, for every 1,000 kPa pressure reduction there is a 5.6 degrees Celsius drop in temperature of the gas.

Dependent on inlet gas temperatures, ambient temperatures, differential pressures and capacity, the Joule – Thompson effect can impact on the operation of regulating stations as well as downstream pipe work.

Low temperatures can result in degradation on pipe and pipe coatings and can also have an effect on pipe expansion and contractions resulting in heave in pipes and pull out at joints.

As such, by installing an inlet gas heater at the regulating installation, the impacts of this are mitigated to a level, which removes risk of station or pipe work damage.

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4.5.3 Emergency Shut-down Systems

All parts of the gas network; pipelines, distribution mains and consumer piping are protected against accidental over-pressuring. The failure of pressure control equipment or other causes might result in a pressure, which would exceed the maximum allowable operating pressure of the pipeline, main, distribution system or facility. Every regulating station and meter regulating assembly that feeds gas into a lower pressure system, is equipped with suitable pressure-relieving or pressure-limiting devices.

4.5.4 Emergency Management System

The SP AusNet SPIRACS (SP AusNet Incident Response and Contingency System) ensures effective and timely response to emergencies, which may affect the operation of the network, the health and safety of personnel or the public. The SP AusNet SPIRACS aligns with those of the other gas industry participants to ensure an effective industry response to emergencies.

SPIRACS defines emergency roles and responsibilities across SP AusNet and contractor organisations and the communication interface arrangements within its facilities and with outside organisations such as:

- Emergency Services (Police, Fire Authorities etc.);
- gas companies (other distribution or retail businesses);
- government;
- media; and
- community groups and the general public.

SPIRACS further incorporates an emergency organisational structure and operating protocols adopted by SP AusNet for the formal declaration of an emergency and emergency management including:

- immediate response;
- emergency site management and declared Emergency Control Centre;
- ongoing management of the emergency;
- personnel resourcing and management; and
- recovery and reinstatement of processes.

The SP AusNet Control Room maintains emergency rosters and regular up-dates of after hours and emergency contact numbers to ensure prompt response to after hours enquires. Key contractors also maintain an after-hours duty roster for field personnel for each regional centre.

4.5.5 Emergency Communication Systems

SP AusNet controls emergency response fault calls, managing the process from call receipt to despatch. Public fault calls are received and electronically entered into a call management system, PowerOn, by Customer Services at the Whittlesea-based call centre.

Priority 'A' and 'B' calls are monitored and accessed by the Network Control Centre for immediate action. Dependant on associated risks; some calls may be escalated for emergency response in accordance with the Emergency Management Plan.

Records of calls and response times are maintained and used as a KPI with results analysed to identify areas for improvement.

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4.6 Internal Monitoring, Auditing and Reviewing

SP AusNet facilities are subject to regular audits to verify compliance with specified technical, operational and safety standards and legislative requirements. Audits are undertaken in accordance with specified procedures to ensure the requisite compliance is achieved in all aspects of the design, construction, installation, operation and maintenance of the SP AusNet network. Audit teams, whether sourced from external consulting firms or internal staff, are trained to ensure a competent and consistent approach, suitability and effectiveness of auditing.

- **Regulatory Audits** - Regulatory audits are undertaken twice annually. The audits focus on the key areas of regulatory compliance to the *Gas Safety Act*. For these key areas, the audit assesses the adequacy of controls to establish, operate and maintain compliance.
- **Health and Safety** - Occupational health and safety audits are undertaken on a regular basis for all worksites, plant and equipment.
- **Quality Management System (QMS)** - Networks design, construction and operations activities are managed in accordance with the accredited AS/NZS ISO 9001 management system. The certification authority for maintenance of this accreditation undertakes external bi-annual audits of the QMS. Internal audit of the QMS for the purposes of continual and systematic identification of deficiencies in, and subsequent improvements of, the system is undertaken over a three-year cycle to audit each and every element/clause of the Safety Management System.
- **Design Audits** - Design audits are undertaken for all network generic and complex designs. The contractor undertakes day-to-day design reviews for generic design in accordance with SP AusNet technical standards. SP AusNet then conducts audits of the contractor to ensure compliance.
- **Materials Procurement** – SP AusNet, through established and documented procedures, conducts regular audits to ensure the appropriate quality and functionality of materials to be utilised within the network.
- **Contractor Performance** - SP AusNet has statutory responsibilities for the provision of safe workplaces and systems of work, which cannot be delegated. It is therefore essential to ensure contractors carry out their responsibilities with regard to safety and compliance with specific regulations or controls, which apply to the work site. Accordingly, SP AusNet conducts regular reviews and audits of contractor performance.
- **Odourant levels** - SP AusNet monitors and reviews gas quality and fringe point gas odourant levels on a monthly basis. Fringe point odourant level reports are summarised in monthly business KPI reports and quarterly in ESV KPI reports.

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4.7 Safety Case Workforce Management

4.7.1 Permit to Work System

Safe access to a site and equipment is controlled by the Permit to Work process in accordance with specified procedures. These procedures describes the process used when planned or unplanned works are intended to take place on SP AusNet assets to ensure that field activities defined as safety-critical operations are undertaken in a safe manner in controlled environments to maintain compliance with the relevant legislation, codes and standards.

In determining whether a Work Permit is required, the Center Emergency Operations Team (CEOT) reviews the application to determine whether there will be a conflict with other work, ensures all details are recorded, and accepts or rejects the application using specified forms and clearly state the reason(s).

Once the work is complete, it is the Permit Issuing Officer and recipient's responsibility to ensure work is conducted in accordance with the Work Permit and is made safe. All Permit Issuing Officers are listed in a register maintained by the CEOT in addition to all records generated by this Permit to Work process in accordance with the records management procedures. Competencies for Permit Issuing Officer, recipient and field staff are managed by SP AusNet's Prime Service Provider.

4.7.2 Training

SP AusNet provides training programs to ensure personnel skills at all levels are appropriate and adequate for gas-related work. The core competencies adopted are outlined in SP AusNet's "Gas Construction and Maintenance Competencies Guidelines". Safety Case general awareness and specific training constitutes part of the annual Safety Case Development Plan formulated and outworked to SP AusNet by the Safety Case Governance Committee (SCGC).

SP AusNet requires its contractors to also provide details of training and competency assessments, at specified intervals, for gas-related work carried out on the distribution and transmission systems. In addition, contractors are required to maintain a personnel skills register and individual training records.

Employees receive induction training that is appropriate to their position or service responsibilities. This includes induction training with respect to Safety (Occupational Health and Safety and Asset Safety), Quality, Environmental and Regulatory Compliance. On an ongoing basis, staff's training needs are assessed to ensure that employees maintain the level of knowledge, skill as appropriate to the task, the *Gas Safety Act* and other acts and regulations as appropriate. Further training needs is identified for each employee on an annual basis during the performance appraisal process.

4.8 Safety Case Records and Reporting

4.8.1 Key Performance Indicators

SP AusNet, in agreement with the ESC and ESV, has defined the outputs parameters for monitoring the performance of the distribution businesses. These are in the form of Key Performance Indicators (KPIs) and are reported to the ESV and ESC on a quarterly basis. KPI data is reviewed and analysed, both monthly and quarterly, to assess the adequacy of controls in the gas network and to ensure compliance with regulatory requirements.

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SP AusNet is benchmarked against the other distribution businesses by the ESC in its *Gas Industry Comparative Performance Report*. The latest report issued in October 2007, identified SP AusNet as a good performer in almost all areas when compared to the other distribution businesses. SP AusNet was rated as either first or second in the following categories: •

- Unplanned SAIDI
- Total CAIDI
- Number of outages affecting more than 5 customers
- Low pressure gas network replacement
- Number of late appointments
- Number of payments for lengthy interruptions.

Many of the SP AusNet KPIs results measured by the ESC were more favourable than the other Victorian distribution businesses.

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SP AusNet's achievements of the 2007 year and targets are shown in Table 4-1 below.

Table 4-1: SP AusNet KPI Performance

Internal Key Performance Indicator	Target	2007
% of metro business hours priority A calls responded to within 60 minutes	95 (Monthly)	Target exceeded
% of metro after hours priority A calls responded to within 60 minutes	90 (Monthly)	Target exceeded
% of country priority A calls responded to within 60 minutes	90 (Monthly)	Target exceeded
USAIDI - average unplanned minutes off supply per customer per year	1.0	0.8467
USAIFI - average number of unplanned interruptions per customer	*	0.0202
UCAIDI - average unplanned interruption duration minutes	*	41.91
Emergency response - No. of desktop exercises conducted pa	2	2
Leaks per km of mains	1.4	1.2121
Total meter leaks per 1,000 customers	*	12.87

* A target was not established or utilised for these items during the 2007 period.

Improved performance measures for the 2008 - 2012 Access Arrangement period have recently been implemented. Safety, reliability, asset protection and consumer satisfaction are the main drivers for the improved KPIs enabling diagnosing of asset performance, effectiveness and trend analysis.

The internal high-level KPIs SP AusNet uses to monitor performance are:

- Meter Leaks per 1,000 consumers
- Leaks (Main, Service & meter) per km of main
- Emergency Response Time
- Unplanned System Average Consumer Minutes Off Supply (both planned & unplanned)
- Repeat Outages
- Security Breaches per km of main & service
- Consumer enquires & complaints per consumer

4.8.2 Reporting of Gas Incidents

Incident / fault reporting is a means of capturing, recording and reporting events or faults that occur during day-to-day operation. The Customer Emergency Operations Team (CEOTC) captures all gas network incident data, and leads incident review, analysis, and reporting to manage processes for improved safety outcomes.

Incident data, reporting, recording, investigation and the adequacy of mitigation measures are reviewed with respect to the Formal Safety Assessment at regular operational review meetings. The Safety Case Management Committee as an agenda item also conducts incident review.

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Reports to Energy Safe Victoria are made in accordance with agreed procedures. The incident reporting processes cover:

- incidents affecting SP AusNet assets,
- incidents affecting the public,
- incidents affecting a consumer's gas installation,
- incident severity classification,
- incident investigation; and
- report format and detail

Gas incident records are maintained in accordance with specified procedures and retained for a minimum period of seven years from record creation; then subject to review by originating area before destruction.

4.8.3 Records

Record identification, collection, indexing, filing, storage, maintenance, retrieval, disposition and access are performed in accordance with the Quality Management System. These records demonstrate conformance to specified requirements and the effective operation of the Safety Management System. All records are legible, stored and maintained in such a way that they are readily retrievable and in facilities that provide a suitable environment to minimise damage and prevent loss.

All mains information is recorded in district plans and a computerised graphical information system (AM/FM). These plans show the location of all gas mains, construction material and the date of installation. The plans also show the nominal operating pressures. In addition, all mains, valves, SCADA, and pressure regulating plant data is also stored in an asset maintenance database known as Q4. Q4 is used for recording the condition of the asset and the data is used as a basis for conducting reliability centred maintenance, reviews and development of strategies.

Records and data for regulatory compliance and KPIs are made available to regulatory authorities. Records of monitoring, auditing and system, process, scheme review are maintained in accordance with explicit procedures and retained for periods specified therein. Process improvement records are also recorded and maintained in accordance with specified procedures.

All records relating to the Safety Case are kept at the offices of:

SP AusNet
Level 31, 2 Southbank Boulevard
Melbourne, Victoria 3006

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5 DEFINITIONS

Term	Definition
AM/FM	Automated Mapping / Facilities Management system
AMP	Asset Management Plan
DSCGC	Distribution Safety Cases Governance Committee
SPIRACS	SP AusNet Incident Response and Contingency System
ESC	Essential Services Commission
ESV	Energy Safe Victoria
FSA	Formal Safety Assessment
KPI	Key Performance Indicator
MAOP	Maximum Allowable Operating Pressure
CEOT	Customer Emergency and Operations Team
PowerOn	Fault call management system
Q4	Asset Maintenance Management System
QMS	Quality Management System
SCADA	Supervisory Control and Data Acquisition
SCMC	Safety Case Management Committee
SMS	Safety Management System