Government of South Australia

TECHNICAL REGULATOR SOUTH AUSTRALIA

2024-2025 Annual Report

TECHNICAL REGULATOR SOUTH AUSTRALIA
11 Waymouth Street, Adelaide SA, 5000
GPO Box 618, Adelaide SA, 5001
www.sa.gov.au/otr
Contact phone number: 08 8226 5500
Contact email: DEMOTRMail@sa.gov.au
ISSN: 1832-8687
Date presented to Minister: 30 September 2025

Annual Report of the Technical Regulator 2024-2025

This document describes the operations of the Technical Regulator in the electrical, gas, plumbing and water industries.

The Technical Regulator is a statutory office established by:

- Section 7 of the *Electricity Act 1996*;
- Section 7 of the *Gas Act 1997*; and
- Section 8 of the *Water Industry Act 2012*.

Robert Faunt has held this office since he was appointed as the Technical Regulator under the *Electricity Act 1996* and the *Gas Act 1997* on 28 February 2003, and since he was appointed as the Technical Regulator under the *Water Industry Act 2012* in 2012.

Note: All photographs in this report have been used with the permission of the relevant provider.

To:

Honourable Tom Koutsantonis MP

Minister for Energy and Mining

This annual report will be presented to Parliament to meet the statutory reporting requirements of *Electricity Act 1996 (Sec 14), Public Sector Act 2009* and the requirements of Premier and Cabinet Circular *PC013 Annual Reporting*.

This report is verified to be accurate for the purposes of annual reporting to the Parliament of South Australia.

Submitted on behalf of the OFFICE OF THE TECHNICAL REGULATOR by:

Rob Faunt

Technical Regulator

Date 3 September 2025

Table of Contents

List of Figures

List of Tables

The Office of the Technical Regulator

General Activities of the Office of the Technical Regulator

Overall Activities

Section 1: Overall Background

The Office of the Technical Regulator (OTR) assists the Technical Regulator in the performance of his functions and the exercise of his powers under the *Electricity Act 1996*, the *Gas Act 1997* and the *Water Industry Act 2012* (the Acts).

The Technical Regulator is responsible to the South Australian Government for the safety and technical performance of the electrical, gas, and water industries. The Technical Regulator also works towards ensuring community safety by promoting and enforcing safety measures and Standards across electrical, gas and plumbing appliances, installations, and infrastructure. To fulfil this responsibility, the Technical Regulator carries out an extensive range of activities, including but not limited to providing technical and safety education and advice, incident inspection and investigation activities and audit activities.

The Technical Regulator plays an important role in the development and monitoring of applicable state and national safety and technical Standards and Codes. The Technical Regulator provides technical support and advice on issues to the relevant Ministers and facilitates discussions with industry stakeholders to achieve the best possible outcome for South Australia.

Appendix 1 of the document presents specific results achieved during the last financial year. The flow chart in Appendix 2 summarises the activities through which the Technical Regulator fulfils his obligations under the various Acts and Regulations.

Section 2: Technical and Safety Regulation and Standards

The technical and safety regulation regime is in accordance with the Acts and includes the following components.

2.1. Technical Review of Infrastructure Licence Applications

The Essential Services Commission of South Australia (the Commission) licenses entities under the Acts, and provides the following licences:

- A licence authorising the generation of electricity or the operation of a transmission or distribution network.
- A licence authorising the operation of a gas distribution system.
- A licence authorising the provision of water and/or sewerage retail services.

Entities that have applied for and received a licence exemption may not be exempted from their responsibilities to the Technical Regulator under the Acts.

All licensing requirements can be found on the Commission's website. Licence applications to the Commission must include organisational, commercial, and technical information. Technical information is referred to the Technical Regulator for review, and a response is provided to the Commission for consideration during their licence application assessment.

2.2. Safety, Reliability, Maintenance and Technical Management Plan

The Technical Regulator may or will, require the entities licensed by the Commission to prepare and periodically revise a Safety, Reliability, Maintenance, and Technical Management Plan (SRMTMP).

A SRMTMP is a high-level document relating to safety and technical requirements, which defines key performance indicators to measure the actual performance of an entity. It provides an auditable quality approach to industry safety and technical performance, encouraging the continuous improvement of safety systems and technical compliance.

The SRMTMP addresses issues relating to the technical Standards, operating and maintenance procedures and management practices, including safety requirements, applicable to an entity. The SRMTMP demonstrates how the entity will comply with the direct requirements of the legislation as well as the Standards and Codes called up by the legislation.

The overall information that a SRMTMP must address is defined in the *Electricity (General) Regulations 2012*, the *Gas Regulations 2012*, and the *Water Industry Regulations 2012* (the Regulations). Guidance documents and general information for preparing SRMTMPs are also available on Infrastructure technical regulation | Energy & Mining to assist entities.

The Technical Regulator reviews an entity's SRMTMP and, where appropriate, provides direction and recommendations to assist in refining it before its final approval. The Technical Regulator is directly responsible for the approval of the SRMTMP for the three industries: electricity, gas, and water.

2.3. Audits of Compliance

2.3.1. Infrastructure audits

The Technical Regulator completes safety and technical audits to verify the accuracy of information provided in, and compliance with, an entity's SRMTMP. These audits ensure that safety and technical Standards are maintained in the electrical, gas and water industries by confirming that:

- Appropriate systems and processes have been developed.
- Compliance with these systems and processes is maintained.
- The systems and processes comply with entity's current approved SRMTMP.

The Technical Regulator conducts both field and desktop audits to confirm that the entity is operating in accordance with its policies and procedures which ensure the safe and reliable operation of the infrastructure. Upon completion of an audit, the Technical Regulator provides the entity a report of observations and provides recommendations.

Audits completed by the Technical Regulator also allow for the monitoring of technical safety and reliability trends within the electrical, gas and water industries and comparison to other National and Global industries.

2.3.2. Installations compliance audit

The Technical Regulator has a process in place whereby electrical, gas and plumbing domestic, commercial, and industrial installations are monitored for compliance with the Acts, Regulations, and relevant Standards.

Periodic (seasonal, recurring, and ongoing) events are monitored to ensure the safety of the public and workers at the event in relation to the temporary and permanent electrical, gas and plumbing equipment and installations, in conjunction with other relevant Authorities.

2.4. Incidents Investigations

2.4.1. Infrastructure incidents

Infrastructure incidents that involve death, injury to a person which requires medical assistance, property damage or any critical infrastructure failure must be reported to the Technical Regulator under the *Electricity Act 1996* and the *Gas Act 1997*. Water infrastructure incidents shall also be reported to the Technical Regulator under a specific incident protocol. Incident reports are recorded by the Technical Regulator and, where appropriate, the incidents are investigated.

During major consumer outages and incidents, the Technical Regulator monitors the outage and assesses the adequacy of the response. This provides a level of confidence that the operational and maintenance strategy employed by the service providers is effective.

2.4.2. Installation incidents

Installation incidents are where an appliance or its installations is directly attributed to the cause of human death, injury or property damage. The Regulations require these events to be reported within specific time frames depending on severity.

These events are investigated by the Technical Regulator to determine the cause, often in conjunction with other relevant authorities or organisations, such as the Metropolitan Fire Services (MFS), Country Fire Service (CFS), SA Police (SAPOL), SafeWork SA, and insurance companies. OTR personnel may be called as witnesses in any subsequent legal action.

2.5. Electronic Certificate of Compliance

Certificates of Compliance are provided to property owners by an appropriately licensed person to demonstrate that they have met their duty to ensure that the electrical, gas fitting or plumbing works completed at their property is compliant. See Appendix 3 for an example of an electrical, gas and plumbing electronic Certificate of Compliance. The purpose of the certificate is to:

- Enable self-certification of work.
- Assure the customer that the work is installed and tested to the appropriate Standard.
- Protect the licensed person by confining the responsibilities to the work that they have carried out.
- Allow the Technical Regulator to audit installations for adherence to safety and technical Standards.

The eCoC system is free for electrical, gas and plumbing contractors and workers, and enables them to complete, submit, store and refer to Certificates of Compliance online. Contractors and workers can access the eCoC system via the internet from desktop and mobile devices. A one-time registration needs to be completed to use the eCoC system. Contractors and workers need to provide a professional registration/licence number and expiry date as well as an email address, a password and contractor/worker details.

Continuous improvements are brought to the platform based on the feedback received from users. Any feedback on the system can be sent to otr.ecoc@sa.gov.au. More information and updates on the eCoC project can be found on the eCoC website.

2.6. Technical Advisory Committees

Under the Acts, the Technical Regulator must establish an advisory committee (technical advisory committee) for each industry, including representatives of industry entities, contractor and employee associations involved in the industry, and local government.

The objective of these committees is to provide advice to the Technical Regulator, either on their own initiative or at the request of the Technical Regulator, on any matter relating to the functions of the Technical Regulator.

2.7. Participation in Standards

The Technical Regulator is actively represented on several Australian Standards and joint Australian and New Zealand Standards Committees, the Australian Building Codes Board's Plumbing Code Committee and International Standards. Committees relate to electrical, plumbing and gas products, design, installation and commissioning of electrical installations, gas installations, on-site plumbing installations, and design, operations, and maintenance of electrical, gas and water infrastructure.

Section 3: Emergency Management

The Technical Regulator works closely with relevant emergency management stakeholders to assist in ensuring the resilience of the State in case of an energy emergency, including the State Emergency Management Committee, SA Police, the Australian Energy Market Operator (AEMO) and major SA energy entities. When required, the OTR has several staff members available to be rostered with the State Emergency Centre (SEC) to provide electricity, gas and fuel supply monitoring and engineering service advice during a state emergency.

The Technical Regulator plays a key role in the monitoring of the security of the power system in South Australia. The Technical Regulator works with the Bureau of Meteorology (BOM), and stakeholders within the electricity generation, transmission and distribution industries, to ensure that appropriate precautions are taken during times when there is a risk to the power system (i.e. large storm systems, bushfires, extreme temperatures, very low demand conditions, etc).

During times when the load in South Australia may not be forecast to be balanced by electricity generation, the Technical Regulator may seek voluntary load reduction from large energy users across several industries. The Technical Regulator also manages the South Australian Electricity Manual Load Shedding List (the list) in cooperation with SA Power Networks as the distribution network service provider, ElectraNet as the transmission network service provider, and AEMO as the electricity market operator. The list sets out the electrical circuits which should be tripped if AEMO instructs to reduce load to maintain the power system's security and integrity. The preparation of the list is an obligation on the Technical Regulator under the National Electricity Rules in the role as the Jurisdictional System Security Coordinator for South Australia.

The Technical Regulator also has the responsibility to assess and monitor any threatening situations in relation to gas supply and may be required to manage an emergency where societal objectives can no longer be met by the market. Should an event occur, normally the Short-Term Trading Market (STTM) for gas would be the first line of defence in managing any shortfall. The STTM is operated by AEMO and sets a daily price at each gas hub. It runs once a day, for the day ahead, for each hub. It utilises bids, offers, and forecasts as submitted by the participants and the pipeline capacities to determine the schedules for the deliveries of gas. The STTM also operates a contingency gas market should gas supplies fall short of the estimated daily demand. The use of the contingency gas market will extend the use of market outcomes.

AEMO may issue Threat Notices or Risk Notices in relation to an event affecting the East Coast Gas System. AEMO also has the power to implement Direction Notices to gas Market Participants or Trading Notices to assist in managing a gas system event. The Gas Supply Guarantee process available to AEMO is another measure that could be invoked to make gas available to meet peak demand periods in the National Electricity Market. If the shortfall cannot be resolved by the processes open to AEMO, the Technical Regulator may consider recommending that the Minister issue directions for temporary gas rationing.

Section 4: Consumer Safety Awareness

4.1. Assistance with the Development of Technical Training Courses

The Technical Regulator continues to liaise closely with Consumer and Business Services (CBS), TAFE SA and PEER Vocational Education, Employment and Training (VEET) about tradespeople training curriculums and competencies (CBS regulates the licensing of tradespeople under the *Plumbers, Gas Fitters and Electricians Act 1995*).

4.2. Industry Roadshows

A key initiative of the OTR is Industry Roadshows where presentations are provided to electrical, gas and plumbing workers and contractors across South Australia. Roadshows are provided at all major population centres annually, and other regional areas less frequently, and are typically held in conjunction with industry associations. Roadshows provide an opportunity to share updates in electrical, gas and plumbing Standards and legislation, and obtain feedback from the industry.

4.3. Regulation Roundup

To keep the electrical, gas and plumbing industry informed, the Technical Regulator publishes a bi-annual joint electrical/gas/plumbing industry newsletter – Regulation Roundup. Regulation Roundup is dispatched electronically to contractors and workers.

4.4. Continuous Safety Promotion

4.4.1. Proactive awareness campaign

The ‘Be Energy Safe’ Campaign is facilitated by the Technical Regulator and reviewed annually. Its objective is to promote safety to the community by raising awareness of electrical, gas, and plumbing safety and influencing the public to take the appropriate actions. The campaign involves the provision of messages which are promoted via advertising on the rear of public transport buses, on social media and during traffic reports on the radio. The performance of the campaigns are provided to the Technical Regulator to monitor the rate of penetration of the advertisements.

4.4.2. Reactive awareness campaign

Reactive safety awareness campaigns are undertaken by the Technical Regulator and usually take the form of a single or series of media releases around the topic of interest. Typically, this type of campaign is the result of an incident and ensures that the public receives correct and appropriate safety information.

4.4.3. OTR’s Website

The OTR’s website includes current content on technical regulation and safety issues on the Office of the Technical Regulator | Energy & Mining (energymining.sa.gov.au) and Consumer information for gas, electricity and hot water safety.

4.4.4. Consumer Safety Survey

Every year, the Technical Regulator conducts a consumer safety survey to ascertain the public’s knowledge of gas, electrical and water safety, and the effectiveness of the OTR’s education campaigns and legislative functions. The survey is performed by an external contractor using computer assisted telephone interview and online surveys. Questions used for the survey remain consistent to provide comparisons to previous results.

Section 5: Energy and Water Ombudsman SA

There is a Memorandum of Understanding (MOU) in place between the Technical Regulator and the Energy and Water Ombudsman SA (EWOSA) (EWOSA_Corporate Document_MOU_Technical_Regulator_2017.pdf).

The MOU defines how the two bodies will collaborate with each other to deal with customer complaints within energy and water sectors. The EWOSA occasionally seeks advice from the Technical Regulator on complaints received from customers who are dissatisfied with the resolution provided by the relevant entities (gas, electricity, water, or wastewater). The technical input provided by the Technical Regulator assists EWOSA in assessing a range of complex issues.

Volume I – Electricity Industry

Preface

This volume covers the Technical Regulator's operations under the *Electricity Act 1996* and the Technical Regulator's administration of the *Energy Products (Safety and Efficiency) Act 2000*.

Electricity Act 1996

Section 3 of the *Electricity Act 1996* states that:

"The objects of this Act are—

(a) to promote efficiency and competition in the electricity supply industry; and
(b) to promote the establishment and maintenance of a safe and efficient system of electricity generation, transmission, distribution and supply; and
(c) to establish and enforce proper standards of safety, reliability and quality in the electricity supply industry; and
(d) to establish and enforce proper safety and technical standards for electrical installations; and
(e) to protect the interests of consumers of electricity."

Section 8 of the *Electricity Act 1996* states that:

"The Technical Regulator has the following functions:

(a) the monitoring and regulation of safety and technical standards in the electricity supply industry; and
(b) the monitoring and regulation of safety and technical standards with respect to electrical installations; and
(c) the administration of the provisions of this Act relating to the clearance of vegetation from powerlines; and
(ca) the monitoring and investigation of major interruptions to the electricity supply in the State and the provision of reports relating to such interruptions in accordance with any requirements prescribed by the regulations; and
(d) any other functions prescribed by regulation or assigned to the Technical Regulator by or under this or any other Act."

Energy Products (Safety and Efficiency) Act 2000

The *Energy Products (Safety and Efficiency) Act 2000* makes provisions relating to the safety, performance, energy efficiency and labelling of products powered by electricity, gas or some other energy source.

Section 6: Electrical Infrastructure

6.1. Electricity Supply

6.1.1. Ensuring safety within the Electricity Supply Industry

Public Safety

Public safety is achieved under the *Electricity Act 1996* through:

- The prescription of safe distances between powerlines and structures or vegetation.
- The prescription of safe working distances in proximity to powerlines, which vary depending on the voltage of the powerlines, the type of activity being performed, and the risk assessment being considered by the worker.
- The prescription of technical safety.

Safe Work Practices

The safety of electrical workers is regulated by the *Work Health and Safety Act 2012*. Accidents are required to be reported in accordance with regulation 70 of the *Electricity (General) Regulations 2012*.

The *Electricity Act 1996* and the *Electricity (General) Regulations 2012* set out requirements related to the safety of electricity infrastructure, including monitoring through SRMTMPs and also of electrical installations. Safety performance is measured against nationally accepted benchmarks and expressed as:

- Lost Time Injuries – the number of injuries resulting in more than one working day lost.
- Medical Treatment Injuries – the number of injuries requiring medical treatment.

Electricity entities provide these indicators as part of their annual reporting to the Technical Regulator.

Live Powerline Work Safety

The *Electricity (General) Regulations 2012* prescribe safety procedures and processes to be employed while working on or near live powerlines. A person who wants to perform high voltage live line work must complete an appropriate training course. The content of that course and the training provider must be approved by the Technical Regulator. Currently, seven training providers have obtained Technical Regulator approval:

- SA Power Networks Skill Enhancement Centre.
- Omaka Training (New Zealand).
- Transgrid.
- Serect — A Subsidiary of Electrité De France (Edf).
- Aeropower Pty Ltd.
- Powerline Training Pty Ltd.
- Enersafe.

Substation Work Safety

Substations are considered high risk areas. Prior to working in a substation, a worker must have the appropriate level of accreditation for access to the required areas and functions in the substations, complete an induction and follow safe access processes including compliance with work permit systems.

6.1.2. Major Generation

In South Australia, the major entities responsible for scheduled generation supply a total installed nameplate capacity of 3047.88megawatts (MW). Natural gas is the source of fuel for the majority of these generators, see Figure E1.

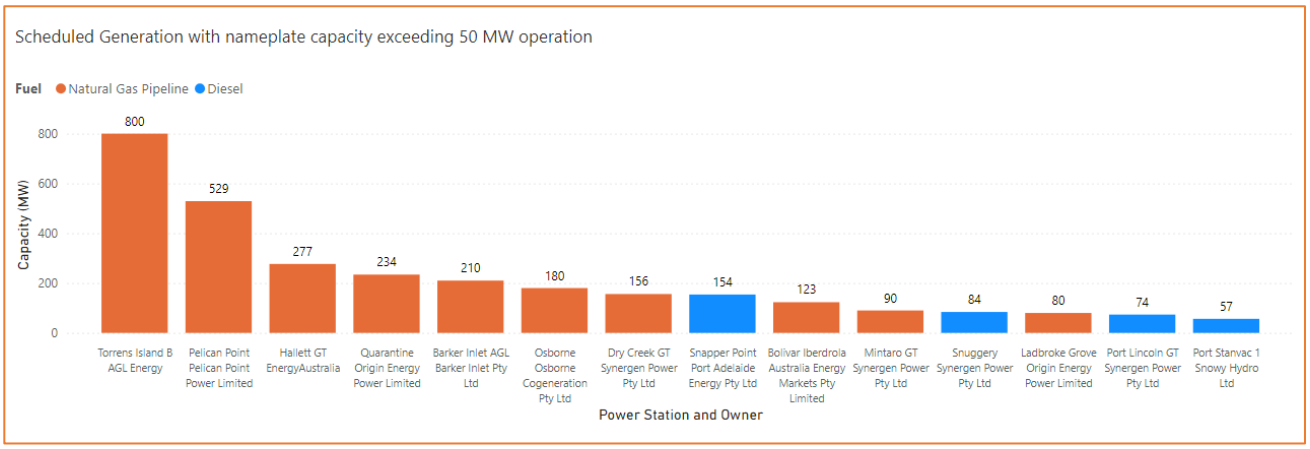


Figure E 1: Scheduled Generation with nameplate capacity exceeding 50 MW

Note: Reference: AEMO: NEM Generation Information July 2025

6.1.3. Energy Storage

South Australia's generation mix also includes an increasing number of grid scale energy storage facilities, see Figure E2.

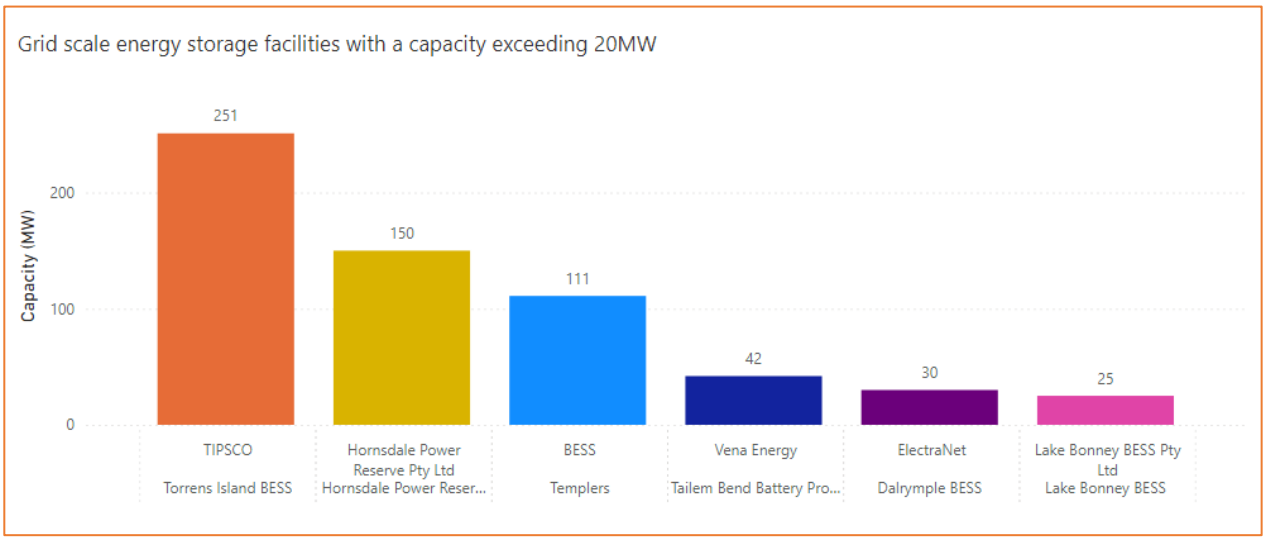


Figure E 2: Grid scale energy storage facilities with a capacity exceeding 20MW

Reference: AEMO: NEM Generation Information July 2025

6.1.4. Renewable Generation

South Australia's generation mix also includes an increasing number of grid scale energy storage facilities, see Figure E3.

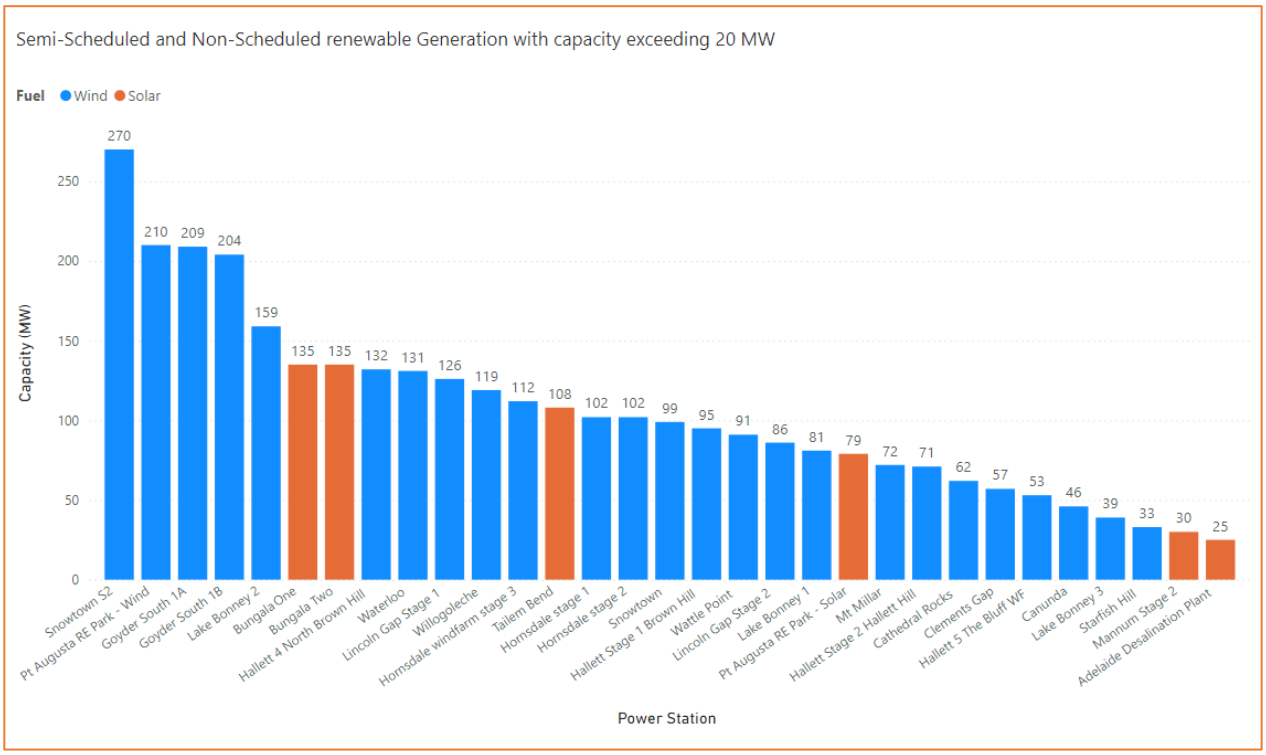


Figure E 3: Semi-Scheduled and Non-Scheduled renewable Generation

Reference: AEMO: Generation with capacity exceeding 20 MW. NEM Generation Information July 2025

6.1.5. Transmission

The electricity transmission system transports power from power stations directly to a series of sub-stations and switchyards, which in turn supply the distribution system and directly connected transmission customers. The major transmission entity in South Australia, ElectraNet, owns and operates a network of approximately 6,651circuit kilometres of transmission lines. As at 30 June 2024 the network operates at nominal voltages of primarily 275 kilo-Volts (kV) and 132 kV with a smaller number of 66 kV lines. This includes 27 circuit kilometres of underground 275 KV.

The South Australian electricity transmission network is connected to Victoria through the Heywood and Murraylink interconnectors.

ElectraNet operates 99 substations. Substations included in the transmission network are primarily of outdoor construction and air insulated. The network includes some gas insulated metal clad switchgear. ElectraNet does not own all of the assets or land at a number of substations; these sites are shared with other electricity entities, primarily SA Power Networks, the operator of the distribution network.

A system monitoring and switching centre for the transmission network is located in Adelaide and includes Supervisory Control and Data Acquisition (SCADA) facilities to monitor system conditions at substations and to control equipment in the network.

The transmission system is the backbone of electricity supply in South Australia and is being maintained at a high level of reliability and availability. A number of thermal

generators and wind farms are connected to the transmission network at various locations throughout the State.

Murraylink Transmission Company

The Murraylink Transmission Company Pty Ltd runs an inter-regional transmission service comprising two high voltage direct current cables 176 km in length between Berri in South Australia and Red Cliffs in Victoria. At both ends of the cable is a DC-AC converter station to connect Murraylink to the existing transmission systems in South Australia (at 132 kV) and Victoria (at 220 kV).

Murraylink is a bi-directional facility with a steady state transfer capability of 220 MW at the receiving end. It provides South Australian consumers with access to generation from Victoria and New South Wales at times of local peak loads or generation shortfall. During off-peak periods, Murraylink is able to export excess South Australian generation to Victoria and New South Wales consumers.

6.1.6. Distribution

In South Australia, the entity primarily responsible for electricity distribution is SA Power Networks which serves approximately 917,200 customers. There are a number of smaller distribution entities covering remote areas. Some of these areas were managed by SA Power Networks under contract for the reporting period. The electricity distribution network in South Australia covers more than 178,000 km^2. The network extends across difficult and remote terrain and operates in demanding conditions and stretches for over 90,860km, and includes around 400 zone substations, 75,251 street transformers and around 650,000 Stobie poles. Some distribution substations are within sites shared with ElectraNet. See Figure E4 for operating voltage and distribution network length.

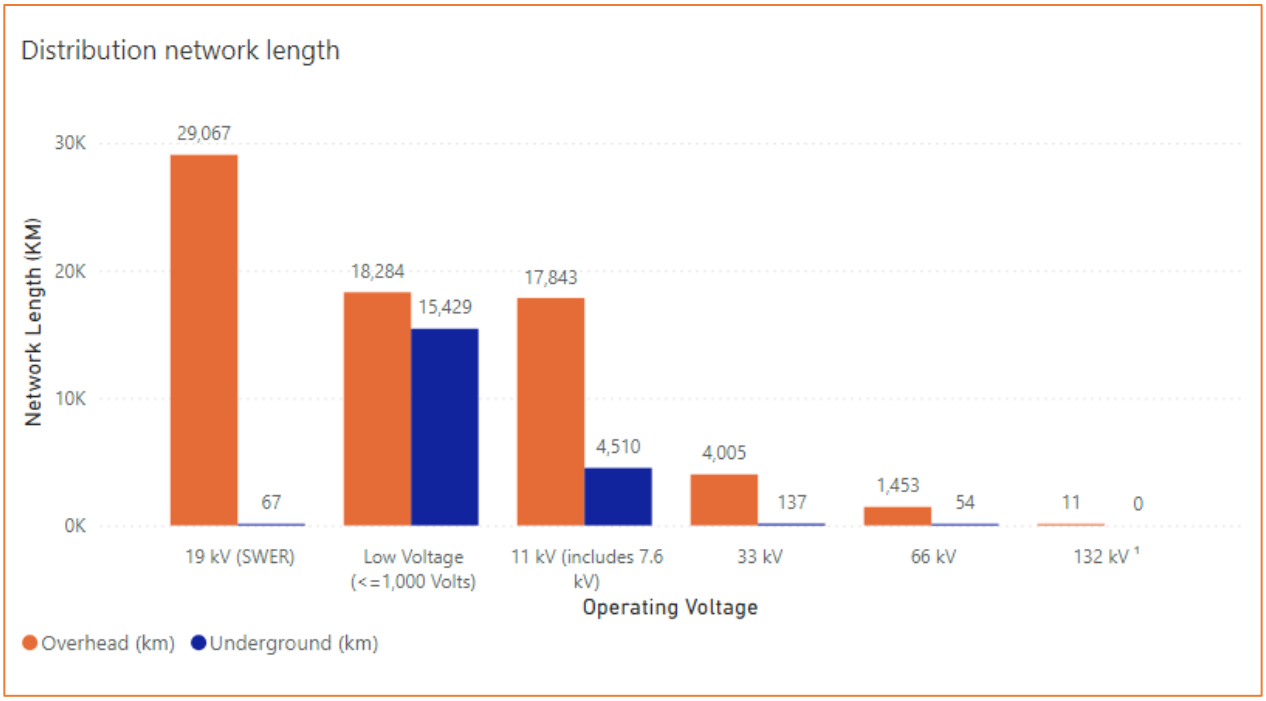


Figure E 4: Distribution network length at 30 June 2025

[1] Licence modified to allow for 132 kV distribution assets

SA Power Networks Key Performance Indicators (KPIs)

SA Power Networks KPIs cover service and technical Standards and include supply interruptions, power surges and low and high voltage complaints. SA Power Networks reports its performance against these KPIs, with reliability and outage indicators on a quarterly basis and all other indicators on an annual basis. The Technical Regulator receives and reviews these reports and follows up on any technical issues, where deemed appropriate, to ensure that corrective action has been taken or is planned. This reporting process ensures that the Technical Regulator is kept informed of major outages and provides assurance that the reliability of electricity supply is being maintained or improved. These KPIs are included in Table K2 in Volume IV of Appendix 1.

6.2. Smarter Homes Program

Following advice from AEMO, a number of technical standards and requirements for smaller generators such as rooftop solar have been introduced in South Australia and are in effect as of 28 September 2020. These requirements include:

- Voltage ride though Standards for generating systems connected to the electricity network via an inverter.
- Remote disconnection and reconnection requirements.
- Dynamic export limit requirements.
- Smart meter minimum technical standards.
- Tariffs to incentivise energy use in low demand periods.

Implementation and ongoing administration of these requirements by the OTR helps to ensure the power system in South Australia remains safe and reliable.

6.2.1. Voltage Ride Through Standards

From 28 September 2020 any generator connected via a low voltage inverter to the SA Power Networks electricity distribution network must comply with undervoltage ride-through performance standards designed to mitigate impacts on the South Australian power system during disturbances. The investors are approved, tested in accordance with AS/NZS4777.2 by the Clean Energy Council (CEC) and are listed on CEC website.

6.2.2. Remote Disconnect and Reconnect

In addition to Voltage ride through, newly installed prescribed grid connected generating systems are required to be capable of being remotely disconnected and reconnected by a Relevant Agent registered with the Technical Regulator. A Relevant Agent is a party who has been authorised and appointed by the owner or operator of the prescribed electricity generating plant by written authorisation to manage the requirement on their behalf.

7.2.1 Dynamic Export Limit Requirement

New technical standards now require that prescribed generating systems connecting to the South Australian distribution network after 1 July 2023 are capable of being export limited and for export limits to be updated remotely. Together these concepts are referred to as Dynamic Exports and are being implemented via the SA Power Networks flexible exports program.

6.2.3. Smart Meter Minimum Technical Standards

As of 28 September 2020, the standard requires a smart meter to be capable of separately measuring and controlling an electricity generating plant and controllable load from essential load. Smart meters must be installed in accordance with the guidelines issued by the Technical Regulator and the meter installation is required to comply with the Technical Regulator Guideline - Smart Meter Minimum Technical Standard.

6.2.4. Tariffs to incentivise Energy

This requirement which is in effect as of 28 September 2020 applies to retailers' standing offers for customers with interval meters. This ensures retailers make offers that reward customers for using electricity in low demand periods. These will typically include a 'time of use' tariff, which incentivises energy use during the day while disincentivising energy use during the evening and overnight.

6.3. Safety Clearances to Powerlines

The Technical Regulator is responsible for the administration of the provisions of the *Electricity Act 1996* relating to the safe clearance of buildings and structures, workers and equipment, and vegetation from powerlines.

Where there is a dispute relating to either vegetation or building clearances, the Technical Regulator strives to facilitate a sensible, safe and agreeable resolution that complies with the requirements of the legislation.

6.3.1. Vegetation Clearance

The Technical Regulator administers the Electricity (Principles of Vegetation Clearance) Regulations 2021 which include:

- The required clearance distances and the normal clearance cycle of vegetation.
- The list of species of vegetation which may be planted or nurtured near powerlines.
- Providing the occupiers of land an opportunity to lodge an objection in relation to vegetation clearance issues.
- Bushfire risk boundaries which dictate clearance distances between overhead powerlines and trees or other vegetation.

Risks associated with Vegetation near Powerlines

The risks directly associated with vegetation contacting powerlines include electric shocks, fire, damage to infrastructure and interruptions of supply. To protect people and property from these risks, clearance zones and buffer zones (which limit the amount of pruning of vegetation) and planting restrictions have been established under the *Electricity (Principles of Vegetation Clearance) Regulations 2021*.

In South Australia, a special case for concern is the risk of bushfires being started by overhead powerlines. This risk is principally managed through vegetation clearance, keeping flammable material well away from powerlines.

Vegetation Clearance Objections

Electrical entities conduct a periodic vegetation inspection at intervals of no longer than three years. In bushfire risk areas, annual inspections are conducted prior to the bushfire season. When an electricity entity identifies vegetation on private property as requiring trimming or removal, the entity is required to provide the owner or occupier with a 30-day

notice of intention to enter the property to cut vegetation. The owner or occupier then has 21 days after receiving the notice to lodge a written notice of objection with the Technical Regulator. The Technical Regulator holds regular meetings with SA Power Networks and Active Tree Services' management throughout the year, to discuss any disputes or other matters regarding vegetation near powerlines.

Vegetation Clearance Agreements

The *Electricity Act 1996* makes provision for electricity transmission and distribution entities and Councils to enter into agreed vegetation clearance schemes under which vegetation clearance responsibilities may be conferred on a Council. A Council also may agree to pay for the cost of more frequent clearance in order to reduce the scale of a three-yearly pruning by the entity. There is currently one agreement in place, between a metropolitan Council and SA Power Networks.

6.3.2. Building and Working Clearances

The *Electricity (General) Regulations 2012* define the minimum clearances between buildings or structures and powerlines. Section 86 of the *Electricity Act 1996* also gives the Technical Regulator power to grant an approval (subject to limitations as specified in the *Electricity (General) Regulations 2012)* for a building or structure to be erected within the prescribed clearance distances.

Risks associated with Buildings near Powerlines

Minimum building clearances are defined in the legislation to prevent electric shocks, damage to infrastructure or property, and to ensure the reliability of supply.

The Technical Regulator actively promotes awareness of these legislated distances within the construction industry by providing verbal and written advice and presentations, undertaking site assessments, and distributing information via brochures and the internet.

The *Electricity Act 1996* makes provisions for an electricity entity to rectify identified breaches of minimum safety clearances and recover the costs by means of a court order.

Compliance with Building Clearances

The Office of the Technical Regulator worked with network operators, builders and other stakeholders to resolve numerous under construction and completed buildings found to be within the minimum building clearances defined in regulation.

Often these are resolved by costly modification of the electricity infrastructure – a large expense added to the cost of a building, highlighting the importance of proper planning when designing structures in proximity to powerlines and other electricity

Section 7: Electrical Installation

7.1. Regulatory Framework

The safety of electrical installations is mandated by the *Electricity Act 1996* and the *Electricity (General) Regulations 2012*. This legislation defines the powers, rights and responsibilities of the various parties in relation to the safety of electrical installations. The *Electricity (General) Regulations 2012* mandate compliance with AS/NZS 3000 – Wiring Rules as well as the technical installation rules of the network operator.

Key issues covered by the *Electricity Act 1996* and the *Electricity (General) Regulations 2012* include placing the responsibility for the safety of an electrical installation with the owner or operator of that installation, and the reliance on a Certificate of Compliance as a means of demonstrating that this responsibility has been met. Likewise, the person connecting the installation to the network (typically the network operator) can rely on the Certificate of Compliance to demonstrate they have met their obligation regarding the safety and compliance of the installation.

Occasionally, installations and appliances are deliberately misused by unlicensed persons involved in illegal activities, for example in the manufacture of illegal drugs.

7.2. Compliance Audits

Audits may be random or targeted. Targets for random audits are obtained from data such as lists of new connections and alterations such as solar installations supplied by network operators. Targeted audits are performed following complaints, concerns from past performance or intelligence gathered from the industry.

The Technical Regulator inspects electrical installations against requirements specified in AS/NZS 3001 for caravans, and the high levels of potential risk involved.

Figure E 5: Non-compliant electrical installation caused an electric shock on this tap

Figure E5 shows an external tap on the rear of a caravan where the owner went to use tap and received electric shock. *Scenario:* Owner was barefoot, moist ground, a new extension cord set being used, the fibreglass surfaces of van are fibreglass and so was

not conductive, only chassis of the caravan is bonded to earth in this case. *Investigation:* The tests carried out on the caravan as per AS/NZS 3017 and AS/NZS 3000 tested compliant. However further investigation revealed the tourist park's power pole the caravan was energised from had a faulty socket outlet earth connection, therefore did not provide the appropriate earth leakage current return path. The owner simulated the missing return path by touching the tap with bare feet on the moist surface of the ground. Once the earth was reinstated the voltage and current reduced to a negligible amount it returned to normal operating conditions.

Other specialist areas that are audited include building sites, hospitals, recreational vehicles, caravan parks, boats and marinas, hazardous areas and patient areas.

7.3. Electrical Helpline

Electrical workers and contractors are encouraged to call the Technical Regulator for assistance with technical compliance matters. This proactive strategy helps the industry achieve compliance in a timely manner. The helpline is available 8am -4.30pm Monday to Friday.

7.4. Enforcement

The Technical Regulator has a range of enforcement options to deal with non-compliant electrical installation work and other breaches of the *Electricity Act 1996.*

7.5. Directive to make installation safe

An authorised officer can give a direction to make an electrical installation safe. This direction can be given to the owner or operator of the installation or to the person who performed the work. In some cases, this may also include disconnection of the installation until it is repaired and made safe to the satisfaction of the authorised officer.

7.6. Formal Warnings

A formal warning can be given to the person responsible for breaching the Electricity Act 1996. If this is done verbally it is also confirmed in writing. Formal warnings provide a basis for additional enforcement activity should there be an escalation of the offence, in addition to establishing patterns of repeated non-compliance.

7.7. Expiation Notices

Expiation notices are issued for more serious breaches of the Electricity Act 1996. They are an administrative penalty that is intended to minimise the impacts on the courts and legal system caused by relatively minor offences. The issue of an expiation notice does not register a conviction against the alleged offender, and paying the expiation fee is not considered to be an admission of guilt. Expiation notices can be challenged in court by the alleged offender, who could then face the potential of a significantly higher penalty if found guilty.

7.8. Prosecution

Expiation notices are issued for more serious breaches of the Electricity Act 1996. They are an administrative penalty that is intended to minimise the impacts on the courts and legal system caused by relatively minor offences. The issue of an expiation notice does not register a conviction against the alleged offender, and paying the expiation fee is not considered to be an admission of guilt. Expiation notices can be challenged in court by the alleged offender, who could then face the potential of a significantly higher penalty if found guilty.

7.9. Suspension/cancellation of licenses

In cases of serious or consistent non-compliance, the Technical Regulator may refer a case to the Commissioner for Consumer Affairs (who is responsible for occupational licensing under the *Plumbers, Gas Fitters and Electricians Act 1995*) for action. This may result in the suspension or cancellation of a contractor's licence or worker's registration, or the imposition of conditions on that licence/registration.

Instances of electrical work performed by non-licensed/registered persons are also forwarded to the Commissioner.

7.10. Reporting of Electric Shocks

All incidents that result in electric shocks or burns must be reported to the Technical Regulator. In the case of death, this must be done immediately. If a person requires medical treatment it must be reported within one working day. All other instances must be reported within 10 working days.

This allows an appropriate time for the incident to be investigated. The Technical Regulator investigates electrical fatalities, usually in conjunction with SA Police. Other investigations are normally performed by registered electrical workers. Incident reports help prevent recurrences of the event and may result in enforcement action being taken. Statistical data from shock and incident reports also assist with resource allocation and scope for potential changes to electrical Standards.

7.11. Reporting of Fires

All incidents that result in fires related to an electrical installation, equipment or appliances must be reported by the Metropolitan Fire Service (MFS) to the Technical Regulator. These are usually done quarterly due to an appropriate time for the incident to be investigated by fire investigators.

Section 8: Electrical Products

The Energy Products (Safety and Efficiency) Act 2000 is administered by the Technical Regulator and requires that proclaimed classes of electrical products must comply with specified safety and performance Standards and be labelled to show compliance before sale.

Other Australasian jurisdictions have similar legislation. The Technical Regulator works with other Australasian Regulators and Standards Committees to ensure a nationally consistent electrical product safety regulatory regime.

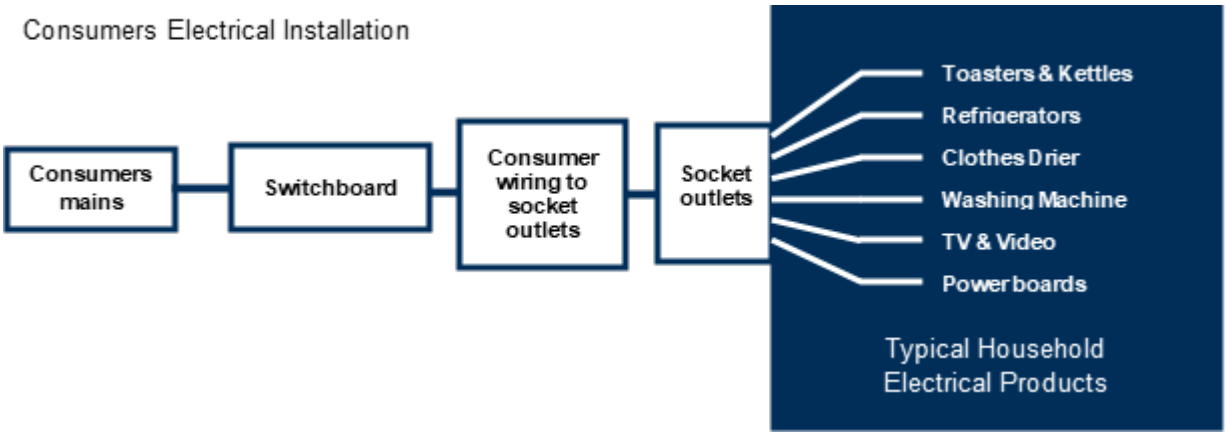


Figure E 6: Boundary of installations from products

An electrical product is any device that needs to be connected to the household electricity supply. This includes such items as white goods, power tools, portable household products, power boards, air conditioners and hot water services. It is estimated that the typical household has up to 50 electrical products.

The Technical Regulator investigates reports of breaches of the *Energy Products (Safety and Efficiency) Act 2000*. This can result in the issue of stop sale notices, public warning statements, product recalls, expiation notices or prosecution.

8.1. Role of the Technical Regulator

The Technical Regulator, in accordance with the *Energy Products (Safety and Efficiency) Act 2000*, grants electrical products safety labelling certificates and electrical product suitability certificates to applicants. The certificates are required to label electrical products to indicate their compliance with applicable Standards or certify their suitability to connect to an electricity transmission or distribution network before sale. The Technical Regulator also follows up these products after sale, through field audits and product investigations, based on reported failures.

The Technical Regulator is represented on national regulatory and Standards committees, the aim of which is to ensure that regulators act in a coordinated manner throughout Australia and that the safety Standards impose a common, acceptable level of safety. These committees are listed in Section 10.2.

The Technical Regulator also provides technical advice to manufacturers and importers, the electrical industry, government agencies and emergency services.

The Technical Regulator has powers under the *Energy Products (Safety and Efficiency) Act 2000* to prohibit the sale or use of unsafe energy products (including recall or repair) and issue public warning statements about unsafe energy products.

8.2. Product Safety

8.2.1. Product Approval

Over 60classes of products proclaimed under the *Energy Products (Safety and Efficiency) Act 2000*, which must comply with specified safety and performance Standards. This list has evolved over time, and typically includes household products that, in the past, have been involved in numerous fires and/or electric shock incidents and therefore represent a 'high risk' category.

These products, which are covered by similar legislation in all Australian States, require pre-market approval and must carry an approval label to indicate their compliance with safety and performance Standards before they can be sold. Proclaimed products, also known as Level 3 electrical equipment, and the full list of current regulated Level 3 products can be found on EESS.

8.2.2. Product Approval Safety Process

In South Australia, the current approvals process requires manufacturers or importers to submit samples of proclaimed products for testing at accredited laboratories to ensure their compliance with the applicable Australian/New Zealand safety and technical Standards. These Standards set down the basic requirements that the products must meet to be considered electrically safe. Typically, these requirements include levels of protection to guard against such things as unsafe construction, access to live parts, overheating from normal or abnormal operation and fire propagation.

Testing must be carried out in accordance with the relevant Standards by appropriate test laboratory facilities in Australia or overseas. In Australia, this means a testing facility that has National Association of Testing Authorities (NATA) accreditation. Evidence of compliance can then be submitted to the Technical Regulator or a private certifier, who will verify compliance and then issue a certificate. This certificate is generally valid for five years. When offered for sale, the product must carry the allocated approval marking.

Numerous regulators and private certifiers require product marking in accordance with AS/NZS 4417 (marking of electrical products to indicate compliance with regulations) using the Regulatory Compliance Mark (RCM) symbol as defined in that Standard and as shown in Figure E7 and E8. A regulator may also authorise a mark that contains a letter(s) identifying that regulator, followed by its allocated number (e.g. NSW Fair Trading – NXXXXX), see Figure E9.

Figure E 7: Regulatory Compliance Mark

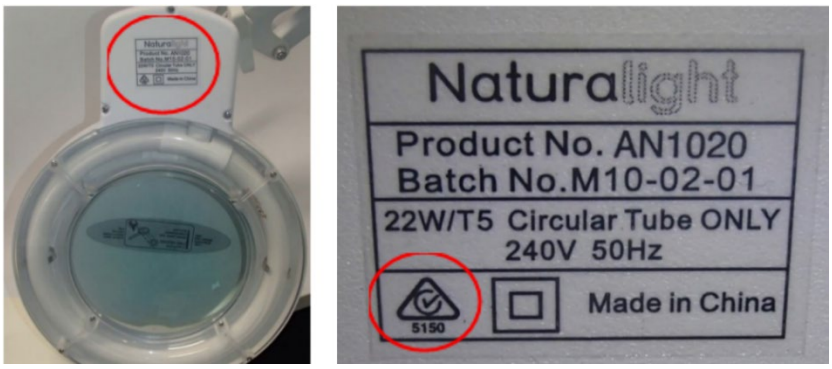


Figure E 8: Example of the RCM approval labelling symbol for an approved product

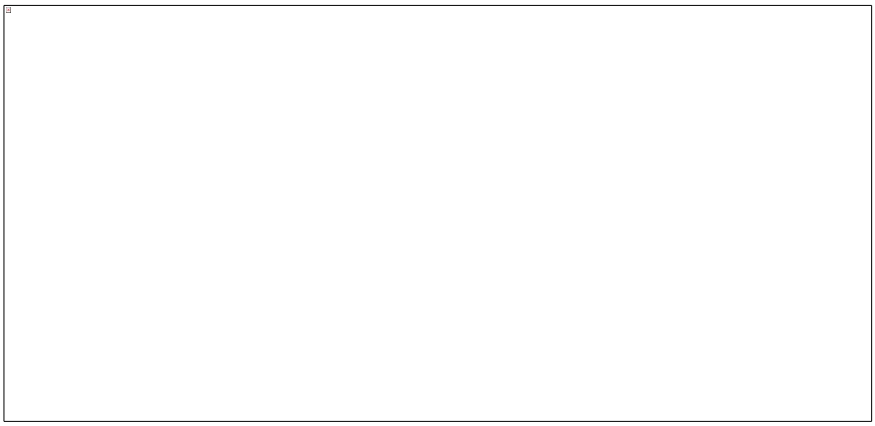


Figure E 9: Example of approval labelling for regulatory authority NSW Fair Trading

Each State in Australia recognises approvals issued by the other State authorities and product certifiers. There are also alternative private certifying bodies which have been recognised interstate, resulting in approval labelling other than that issued by a State Regulator, with a consequent reduction in the number of products being approved by State authorities. The nature of the retail products industry is such that competitors quickly identify any unapproved items for sale and report them to the Technical Regulator, who is then able to take immediate action for breaches of the *Energy Products (Safety and Efficiency) Act 2000*.

8.2.3. Risks Due to Faulty or Misused Products

The risks associated with electrical products that have failed because of their design, or manufacture, or misuse by the consumer include:

- Personal injury (shocks).
- Electrocution (fatalities).
- Property damage (fires).

Manufacturers, importers and retailers also assume liability through the sale of electrical products for:

- Costs of recalls, replacement or repair of products.
- Costs of compensation claims.
- Loss of, or damage to, the organisation’s reputation.

Hazardous Products

Typical hazards found in faulty electrical products include:

- A breakdown of insulation due to overheating or mechanical damage, which may expose the consumer to the risk of electrical shock.
- Overheating of the product, which may result in fire or ignition of its surroundings, exposing consumers to the risk of injury or property damage.
- Mechanical failure, which may cause personal injury to the user.

Figure E 10: Example of an electrical product failure

Figure E10 illustrates the consequences of a faulty electrical connection in a washing machine that overheated and caught fire.

Figure E 11: Example of an electrical product failure

Figure E11 illustrates the consequences of a bathroom heater glass diffuser shattering whilst in use, resulting in the user receiving burns and cuts.

Products may also fail because of misuse by the consumer. Typical examples of this are:

- Incorrect securing of electric blankets resulting in folds that lead to overheating and fire.
- Unsafe placement of radiators and fan heaters adjacent to furniture and materials, resulting in fires.
- Continued use of electrical products with damaged bodies and cords, resulting in electrical shocks.
- Not having products checked after being subjected to an impact or falling from a height.

Figure E 12 shows an example of brand new decorative LED rope lights that started to emit smoke and deform within minutes of use, as a result of the user not observing the warning instructions to remove the packaging.

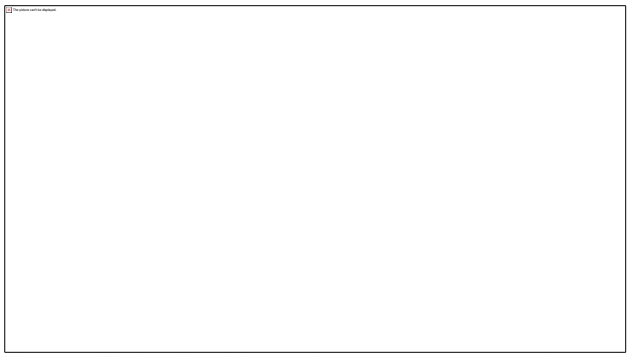


Figure E 12: Incident due to user not observing the warning instructions

In many cases, products are either incorrectly installed or operated by consumers who do not follow the manufacturer's recommendations and instructions. The Technical Regulator alerts consumers and electricians to such risks through public warnings, the continuous development of information brochures, Regulation Roundup and education programs.

8.2.4. Product Failures and Corrective Actions

The Technical Regulator monitors the failures of electrical products. If necessary, action can be taken under the *Energy Products (Safety and Efficiency) Act 2000* to remove any hazardous products from the marketplace. Depending on the severity of the failure, there are a number of options available to the Technical Regulator when assessing what action should be taken for specific situations including:

- Issuing an Incident Report – when the failure of a product has not directly resulted in a safety hazard. The report is circulated to all regulatory authorities throughout Australia and New Zealand for information and monitoring.
- Issuing a Hazard Alert – when the failure of a product has resulted in an immediate safety problem such as a reported electric shock. The notice is immediately circulated to all regulatory authorities including both State and Australian Government consumer affairs authorities for information and followed up by action with the trader as considered necessary.
- Issuing a Stop Sale – generally issued in conjunction with a Hazard Alert. The notice is circulated to all regulatory authorities including both State and Australian Government consumer affairs authorities for information and is followed up by action with the trader.
- Issuing a Recall – when a product already on the market has been identified as a safety hazard. This may warrant the issuance of a recall notice and result in a national public product recall conducted in accordance with Australian Competition and Consumer Commission (ACCC) guidelines.

8.2.5. Stop Sales

The Technical Regulator can issue Stop Sale notices to traders in South Australia as the situation warrants. An example of a situation requiring the seller to "Stop Sale" is when the product is proclaimed under the *Energy Products (Safety and Efficiency) Act 2000*,

but is not marked with any approval labelling indicating that it is formally approved for electrical safety.

8.2.6. Mutual Recognition

Under a Mutual Recognition Agreement (MRA) between two or more jurisdictions, one jurisdiction is able to recognise a product approval issued by another.

Apart from the 'corresponding laws' recognised under the *Energy Products (Safety and Efficiency) Act 2000*, several mutual recognition schemes affect the Technical Regulator's operations and those of other State Regulators.

Australian Mutual Recognition

The *Mutual Recognition (South Australia) Act 1993* and the *Mutual Recognition Act 1992 (Commonwealth)* provide that, in principle, a product made in or imported into a State that can be lawfully sold in that State, may be lawfully sold in any other State. A label is required showing the place of manufacture or importation to enable a defence of mutual recognition to be established.

Trans-Tasman Mutual Recognition Arrangement (TTMRA)

The *Trans-Tasman Mutual Recognition (South Australia) Act 1999* and the *Trans-Tasman Mutual Recognition Act 1997 (Commonwealth)* provide that, in principle, products made in or imported into New Zealand that may be lawfully sold in New Zealand, may also be lawfully sold in Australia. A label on the product is required showing the place of manufacture or importation to enable a defence of mutual recognition to be established.

The TTMRA has resulted in some products either manufactured in or imported into New Zealand being offered for sale in Australia without any identifiable approval marking as New Zealand law does not require such labelling.

8.3. Product Energy Efficiency

Energy labelling and Minimum Energy Performance Standards (MEPS) registrations are now regulated by the Australian Government's *Greenhouse and Energy Minimum Standards Act 2012* (GEMS legislation). The energy efficiency requirements of the *Energy Products (Safety and Efficiency) Act 2000* are still applicable but in general terms have become redundant.

8.4. Industry Communication

There are only a few South Australian businesses (including manufacturers, importers and retailers) that submit electrical products to the Technical Regulator for approval. The Technical Regulator distributes newsletters and circulars to these businesses to keep them informed of changes to the *Energy Products (Safety & Efficiency) Act 2000* and Australian Standards as necessary.

Section 9: Electricity Regulatory Coordination

9.1. Electrical Regulatory Authorities Council (ERAC)

National uniformity and consistency are extremely important to electricity utility operators, manufacturers, electrical workers, contractors and consumers. ERAC has representatives from all Australian States and Territories and New Zealand. It formally meets twice per year to address regulatory matters related to key technical and worker licensing issues facing the electrical industry and to develop national strategies to address these issues consistently.

Meetings are divided into five sessions, each with their own chairperson, covering general matters, electrical installations and inspection, electrical equipment safety, electrical licensing and electricity supply (network infrastructure).

ERAC works closely with Standards Australia to maintain and develop national Standards which in turn become State-based requirements when they are called up by legislation. The Technical Regulator, as a member of ERAC, actively participates in Standards development issues arising from ERAC meetings. The Technical Regulator also participates in a number of ERAC working groups to ensure that national developments take account of South Australian issues.

Uniform Standards are beneficial in that they provide for the movement of workers between regions and enable the development of Standards based on the experience of a wider group. The national Standards development process also supports the ongoing review and improvement of safety Standards in a transparent manner. ERAC has been active in setting the agenda for the progressive review and implementation of network safety Standards. This has included a Standard dedicated to safety issues associated with smart meters.

ERAC has been particularly keen to support the timely development of Standards which deal with matters that have a direct impact on the interface between the network industry and the public, such as powerline clearances.

Following its review of the regime for regulating electrical equipment safety in Australia, ERAC has recommended an updated system aimed at eliminating shock, injury and property damage resulting from the sale, supply and use of unsafe electrical equipment. ERAC has proposed that the new system should be underpinned by nationally consistent performance-based legislation in each jurisdiction and comprehensive scheme rules. It contains a mixture of pre-market registration based on third party safety assessment and post-market enforcement.

The system will be designed to take into account the changing character of the electrical appliance supply industry in Australia. The recommendations formed the basis of the Regulatory Impact Statement (RIS), released for public comment by ERAC. Following consideration of public submissions on the RIS and further industry consultation, a final RIS was endorsed by ERAC members. In order for a national scheme to be agreed and implemented, ERAC is in the process of developing an intergovernmental agreement (IGA) between all states and territories to gain Ministerial agreement to progress the scheme.

The then Ministerial Council on Energy (MCE) established the Energy Technical and Safety Leaders Group (Leaders Group). The Leaders Group was tasked with the development of a plan to achieve further harmonisation of State and Territory safety regulation for the electricity and gas supply industry.

The plan presented by the Leaders Group contains recommendations for achieving a harmonised national framework within which State and Territory energy supply industry safety and technical regulations could operate. The plan proposes an IGA as the central mechanism by which jurisdictions would commit to a series of overarching principles and objectives supporting harmonisation. The then MCE gave in-principle agreement to the recommendations contained in the plan as they apply to Energy Ministers' portfolio responsibilities. The then MCE Ministers also agreed to work with related portfolio Ministers within their jurisdiction to progress the proposed IGA. The objective of the IGA is to create a nationally harmonised energy supply industry safety framework, to ensure enhanced public and industry safety, enhance worker mobility and contribute to the efficient delivery of energy network services. In particular, the IGA will formalise governments' commitment to make necessary legislative or other changes to support the nationally harmonised safety framework for the energy supply industry. The IGA does not commit to the development of a model or applied legislation.

As part of the harmonised safety framework, the IGA commits participating jurisdictions to an ongoing work program in Standards development (such as the Australian Standard for Energy Network Safety Systems), operating safety rules and skills and training. This work would be supported by the Energy Supply Industry Safety Committee (ESISC), a non-statutory advisory body that provides advice, knowledge and expertise on the development and implementation of the nationally harmonised safety framework. In 2012, the Australian Government, States and Territories endorsed the IGA on Energy Supply Industry Safety by the signature of First Ministers. Under the IGA, the Australian Government and the State and Territory governments agree to put in place a nationally harmonised safety framework for the energy supply industry. The Terms of Reference (TOR) for the ESISC came into effect with the signing of the IGA. The TOR tasked ESISC to develop and implement a nationally harmonised safety framework for the energy supply industry.

The TOR requires that ESISC submit to the Energy Senior Officials Meeting for approval of the ESISC implementation plan for five years. This plan requires a progress update every 12 months on:

- Energy Network Safety Systems.
- Consistency with National Work Health And Safety.
- Consistency with National Occupational Licensing System Initiatives.
- Legislative And Regulatory Issues.
- Expanded National Refresher Training Recognition Protocol For The Electricity Supply Industry.
- Generation Harmonisation.
- Harmonised Operating Safety Rules.

A key outcome of this work was the development and publication on 18 April 2013 of the Australian Standard AS 5577:2013 Electricity Networks Safety Management Systems. The Standard provides a national framework for the harmonisation of energy network safety systems.

9.2. Committee Representation

The Technical Regulator provides expert technical input for the revision of key Australian Standards through representation on the following Standards committees:

EL-001	*Wiring Rules*
EL-001-09	*Wiring Rules Drafting Subcommittee*
EL-001-17	*Construction and Demolition Sites Installations*
EL-001-21	*Testing and Inspection of Electrical Installations*
EL-001-24	*Generating Sets*
EL-002	*Safety of Household and Similar Electrical Appliances and Small Power Transformers and Power Supplies*
EL-004	*Electrical Accessories*
EL-005	*Secondary Batteries*
EL-011	*Electricity Metering Equipment*
EL-042	*Renewable Energy Power Supply Systems & Equipment*
EL-042-03	*Grid Connected Systems and Equipment*
EL-042-04	*Stand-Alone Power Systems*
EL-042-05	*Safety of Battery Systems for use in Inverter Energy Systems*
EL-044	*Safe Working on Low-Voltage Electrical Installations*
EL-052	*Electrical Energy Networks, Construction and Operation*
ET-007	*Coordinating Committee on Power and Telecommunications (CCPT)*
QR-012	*Conformance Marking to Regulatory Requirements*

Volume II – Gas Industry

Preface

This volume covers the Technical Regulator's operations under the *Gas Act 1997*.

Gas Act 1997

Section 3 of the *Gas Act 1997* states that:

"The objects of this Act are—

(a) to promote efficiency and competition in the gas supply industry; and
(b) to promote the establishment and maintenance of a safe and efficient system of gas distribution and supply; and
(c) to establish and enforce proper standards of safety, reliability and quality in the gas supply industry; and
(d) to establish and enforce proper safety and technical standards for gas installations and appliances; and
(e) to protect the interests of consumers of gas."

The Technical Regulator is established by section 7 of the *Gas Act 1997.*

Section 8 of the *Gas Act 1997* states that:

"The Technical Regulator has the following functions:

(a) the monitoring and regulation of safety and technical standards in the gas supply industry; and
(b) the monitoring and regulation of safety and technical standards with respect to gas installations; and
(c) the provision of advice in relation to safety or technical standards in the gas supply industry to the Commission at the Commission's request; and
(d) any other functions assigned to the Technical Regulator under this Act."

The Technical Regulator advises the Minister for Energy and Mining on gas emergency management and related issues. In addition, the Technical Regulator provides expert input and is involved in a range of activities in liaison with the gas industry and other Government agencies. The Technical Regulator's operations in relation to these functions are dealt with in various sections of this report.

Energy Products (Safety and Efficiency) Act 2000

The *Energy Products (Safety and Efficiency) Act 2000* makes provisions relating to safety, performance, energy efficiency and energy labelling of products powered by electricity, gas or other energy sources.

Section 10: Gas Infrastructure

10.1. Overview of the Natural Gas Industry in SA

Typically, commercial and residential consumers use natural gas for cooking, space and water heating. Industrial use includes processes such as cement and glass manufacturing and steel production.

South Australia receives gas from Moomba (SA) through the Moomba to Adelaide Pipeline (MAP), Southwest Queensland via the QSN Link Pipeline (Ballera) and Victoria via Port Campbell to Adelaide pipeline (PCA pipeline) (see Figure G1). The Southeast Pipeline System (SEPS) delivers gas from the PCA pipeline to the Ladbroke Grove/Katnook pressure reduction station for distribution to the Limestone Coast region in southeast South Australia. The MAP is operated by Epic Energy South Australia (EESA) and the PCA pipeline is operated by SEAGas. A joint venture project between EESA and SEAGas resulted in the interconnection of the two pipelines and was completed in June 2015. This interconnection is located at the Pelican Point Power Station and allows gas to travel mainly from the PCA pipeline to the MAP. This interconnection provides a higher security of supply to the network and power generators in South Australia.

Figure G 1: Southern and eastern Australian gas fields and major pipelines

10.2. South Australian Natural Gas Supply

The role of the Technical Regulator with respect to the gas supply is to monitor the quantity and quality of the gas being supplied into the distribution network and onto consumers. Should there be a gas supply emergency the Technical Regulator will act within the provisions of the legislation to ensure that the impact upon the South Australian community is minimised.

Gas is transported from the source through transmission pipelines and these in turn transfer gas into the distribution networks at custody transfer metering stations, often referred to as ‘City Gate Stations’. Here the gas is metered, the pressure reduced and made ready for transportation through the distribution network to houses and industry.

Australian Gas Networks (AGN) is the licensed owner and operator of the majority of the natural gas distribution networks in South Australia. AGN, contracts the APA Group to operate these networks on its behalf. Gas from the distribution system is then supplied to consumers in accordance with a contract with their retailer. In addition, AGN owns several small gas systems, typically referred to as 'farm taps'. The farm taps supply gas to typically a single industrial/commercial consumer that is fed directly from the transmission pipeline.

As of July 2019, AGN also provides natural gas to the other natural gas distribution company, CleanPeak Energy Tonsley. CleanPeak Energy Tonsley supplies reticulated natural gas to the embedded network to residential site at the Tonsley Innovation District.

Safety of Natural Gas Infrastructure

As required by the *Gas Act 1997* and Gas distribution company must submit a Safety, Reliability, Maintenance and Technical Management Plan (SRMTMP) to the Technical Regulator for approval. The Technical Regulator approves the SRMTMP on an annual basis based on requirements prescribed by legislation, the Essential Services Commission of South Australia's (the Commission) Gas Distribution Code and Gas Metering Code and distribution licence conditions.

10.3. South Australian LP Gas Supply

In south Australia there are three embedded LPG distribution networks, Environmental Land Services (ELS), Origin Energy and Elgas.

Safety of LPG Distribution Networks

Distributors and retailers of reticulated LPG in South Australia are required to have the licencing relevant to their operations granted by the Commission. These licences are subject to several conditions to ensure that the safety and technical requirements of the *Gas Act 1997* and the *Gas Regulations 2012* apply. Network owners operate their LPG distribution networks under a SRMTMP approved by the Technical Regulator.

The Technical Regulator monitors technical compliance to ensure that the construction, commissioning, operations and maintenance of the LPG distribution networks are undertaken according to the appropriate Standards and gas industry practices.

10.4. Gas Safety and Network Integrity

10.4.1. Gas incidents

Infrastructure gas incidents that involve death, or injury to a person requiring medical assistance, property damage above $5,000 or a dangerous situation involving a pipeline operating with pressure above 1,050 kilo-Pascals (kPa), must be reported to the Technical Regulator.

10.4.2. Third party damage

Damage to the distribution systems (mains and services) caused by third party activities constitutes one of the greatest gas related risks to the South Australian community because it can result in gas escapes of large volume. A major factor contributing to the damage of mains and services is a lack of notification from a third party to the gas distributor prior to any activity in the vicinity of the mains and services. In South

Australia, gas distribution companies utilises services such as “Before You Dig Australia” (BYDA) to minimise the likelihood of damage. This service allows the APA Group to advise about the location of gas pipes and to assess the associated risks of the activities proposed by third parties. The Technical Regulator monitors the effectiveness of this service through frequent discussions, annual audits and the review of the annual operational reports.

10.4.3. Gas leak

The identification, location and repair of leaks are key to the safe operation of the distribution network. The public’s safety is a principal priority for the Technical Regulator, distribution system owners and operators. Should a pipeline fail, it could result in a leak that migrates through the ground to a confined space (e.g. a cellar) and thus would pose a major risk of fire or explosion. Any gas escapes that are found in the distribution system would have been detected through either public reporting (reactive) or regular leakage surveys (proactive). The Technical Regulator continues to monitor the gas leak data.

Public reports

The Public can report natural gas leaks through the APA Group emergency/gas leak reporting number (1800 GAS LEAK – 1800 427 532). The public can report LP gas leak with Elgas number 1800 819 783 or 000.

Leakage surveys

Leakage surveys are the key proactive maintenance strategy employed by the distribution system operator to manage leakage and determine the condition and reliability of the gas distribution network. The approach to leakage surveys is currently risk-based and ‘high consequence’ locations are surveyed more frequently.

10.4.4. Unaccounted For Gas (UAFG) and Distribution Mains and Services Integrity Plan (DMSIP)

UAFG is the difference between the measured quantity of gas entering and leaving the distribution network and is thought to be largely due to leakage. Levels of UAFG above industry norms can sometimes relate to the general condition of a distribution network, or an issue related to measurement factors. In old networks, the majority of UAFG is often associated with leaking of cast iron and unprotected steel mains.

10.5. Gas Retailers’ Safety Awareness Plans (SAP)

As of 1 February 2013, following the changes that were made to the National Energy Retail Law (South Australia) (NERL), a gas retailer must prepare, maintain, publish on its website and periodically revise a SAP in accordance with the requirements of Regulation 36A of the NERL. The requirements prescribe that the SAP must include details of the retailers’ consumer communication plan, covering issues ranging from general gas safety information to the gas appliance safety approvals scheme, and whom to contact in the event of a gas supply outage. The gas retailer must obtain the approval of the Technical Regulator for the SAP and any revision thereof.

Section 11: Gas Installation

11.1. Natural Gas and LPG Installations

Gas installations are located downstream of the supplying infrastructure, which for natural gas and reticulated LPG systems is the gas meter. Where LP Gas is supplied by a cylinder or cylinders to a site, the installation starts downstream of the first stage regulator. The condition and safe use of the installation is the responsibility of the owner/operator of the installation. The gas installation generally includes appliances, pipe work, flueing, ventilation and controls.

11.1.1. Responsibilities

The Technical Regulator is responsible, under the *Gas Act 1997*, for the monitoring and regulation of safety and technical Standards with respect to gas installations in South Australia. This involves ensuring that installation work is performed in a safe manner, using appropriate methods and materials that are compliant with relevant Standards. The monitoring and regulating of gas installation work is carried out by officers authorised under the *Gas Act 1997* from the Gas Installation and Appliance Safety team within the Office of the Technical Regulator.

The Regulations call up the Australian Standard AS/NZ 5601 – Gas Installations (and includes any Standard also called up by or under AS/NZ 5601). The Regulations require that an electronic Certificate of Compliance must be issued by the gas fitting contractor to the client within 30 days of the completion of all installation work. The *Energy Products (Safety and Efficiency) Act 2000* requires that certain proclaimed gas appliances must be labelled as evidence that they are approved to appropriate Standards by a recognised certification body or the Technical Regulator.

11.1.2. Residential and Light Commercial Gas Installations

Generally, gas installation work involves the connection of new gas appliances. Every year, a significant amount of new domestic and light commercial gas appliances are sold and installed in South Australia, including multiple appliances installed in new premises as well as single additional and replacement appliances in existing premises. In addition to the installation of new gas appliances, a significant amount of work involves the repair, replacement and extension of existing gas installation pipe work and components such as flues and ventilation equipment.

A number of new residential, as well as industrial/commercial natural gas connections, are made every year to the AGN distribution system. New LPG connections (by various LPG suppliers) are also made to residential and light commercial premises.

In larger new residential developments where natural gas is not available, it is becoming increasingly popular to supply LPG by means of reticulated LPG systems supplied from large storage tanks located on the perimeter of the estate. This has some safety advantages as it removes the need for individual LPG cylinders at each home to be replaced when empty or having individual tanks refilled by tankers.

11.1.3. Industrial and Large Commercial Gas Installations

The Technical Regulator provides oversight on several significant industrial and commercial gas installations and its involvement often extends over months or even years on some larger jobs and often requires multiple site visits.

The Technical Regulator also provides advice on the interpretation of gas Standards to hydraulic consultants, architects and builders as well as to gas contractors. This represents a significant proportion of the work done by the gas safety team in the OTR. Most advice of this type involves commercial or industrial premises. Accordingly, site visits are required to verify that the advice given is consistent with the actual site conditions. This service, whilst resource intensive, is very important and effective as it is preferable to identify and resolve installation issues proactively in advance rather than to reactively deal with non-compliances and potentially unsafe situations in areas where they may create a hazard or delay building handover.

The Technical Regulator monitors complex gas installations particularly where Type B appliances (those that consume more than 10 megajoules of gas per hour) are involved. Contractors must provide submissions to authorised Type B certifiers to initiate the certification process prior to commissioning, inspection/testing and commercial operation. Installers are also required to provide submission plans to the Technical Regulator for elevated pressure installations in order to get gas on to the property or where existing installation pressures are upgraded.

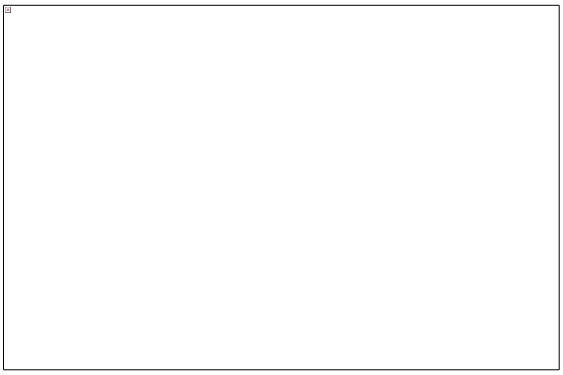


Figure G 2: Type B appliance undergoing commissioning and Type B testing

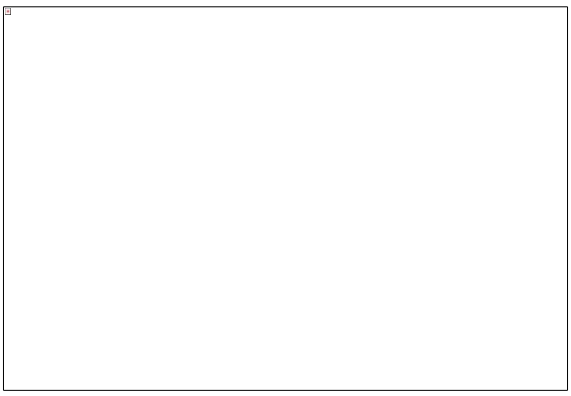


Figure G 3: Type B appliance undergoing modifications and installation

11.1.4. Compliance Audits

Auditing

The Gas installation and Appliances Safety team use standard electronic pro-forma to record audit results. Where work is satisfactory a copy of this form is provided to the installation owner and the contractor. Where there are non-compliances an escalation process is used (see “Enforcement activities for non-compliant gas installations” for more detail).

Where new Type B (industrial and large commercial) gas appliances are installed, it is mandatory that they are individually inspected and tested for compliance with AS 3814. If deemed compliant the equipment can then be certified and then commercially operated. In South Australia, the Australian Gas Association (in alliance with Gassupport Pty Ltd) and TG Certifications are approved to undertake certification testing of Type B appliances. The Technical Regulator in turn carries out sample audits of Type B certification work performed by both certifiers.

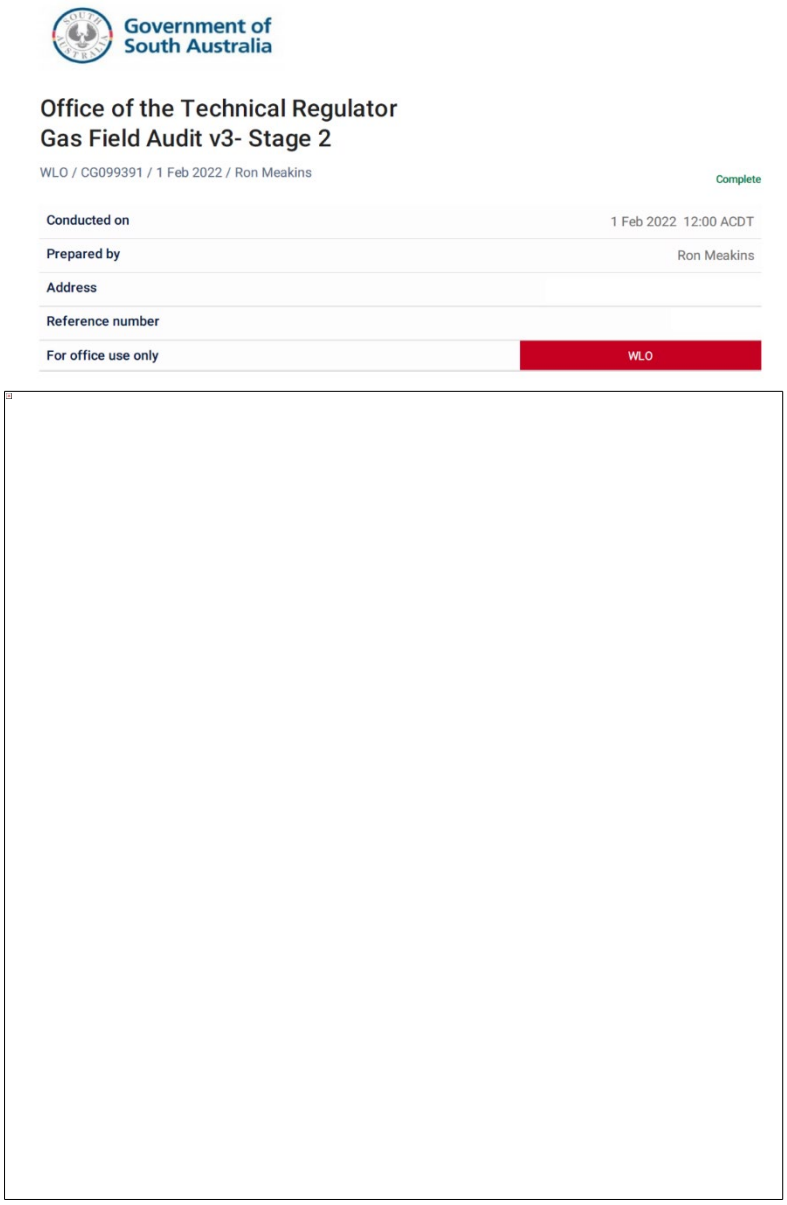


Figure G 4: Example of gas e-audit form

Mobile installations in recreational vehicles

The Technical Regulator pays close attention to the standard of LPG installations and appliances in caravans, motor homes, houseboats, river craft and small sea going vessels – including prawn boats.

Imported recreational vehicles (motor homes, caravans and camper trailers) as well as imported yachts warrant attention because they may include unique proprietary gas pipe and jointing systems not covered in the Installation Standard and appliances that are not certified to the appropriate Australian Appliance Standards.

Similar concerns apply to some imported boats. Gas safety is an ongoing consideration when a gas system or appliance repairs and maintenance is required due to the lack of spare parts. The Technical Regulator encourages importers to make space provision for appliances during the construction of boats or recreational vehicles and then source appliances certified for use in Australia and fit them on arrival in Australia hence ensuring the provision for spare parts and manufacturer warranty to overcome these issues.

South Australian registered commercial marine and river craft come under the control of the Australian Maritime Safety Authority (AMSA) who have delegated authority to the Department for Infrastructure and Transport (DIT) Vessel Unit in South Australian to provide day-to-day operations.

Commercial houseboats are required to be periodically surveyed by DIT accredited marine surveyors. Marine surveyors may advise the owner of the vessel to have a gas safety inspection carried out by a licensed contractor in advance of the slips survey so that the owner can provide evidence of fitness for purpose, by way of a copy of a gas Certificate of Compliance.

Due to the Technical Regulator's auditing activity in this area, some insurance companies have become more aware of gas safety requirements and now insist that the gas installation is certified before marine or catering vehicle insurance policies will be issued or renewed.

Temporary outdoor kitchens at public events

Temporary kitchens are set up to cater for outside public events and in most cases these kitchens operate on LPG supplied from portable cylinders located nearby. They may be in trucks, trailers, caravans, marquees or even inside permanent structures such as community halls.

Every year, the Technical Regulator holds pre-event gas safety meetings including PowerPoint presentations with organisers of major events. This is done to ensure that the catering companies and smaller itinerant operators on site are aware of gas safety requirements. Common issues that arise relate to installations assembled by the stallholder (e.g. using gas hose assemblies) rather than using a licensed gas fitter. Most appliances used at these events are portable burners or barbecue style appliances and it is not mandatory for a gas fitter to connect them.

The areas that are most closely monitored are the condition and protection of the appliances, gas cylinders, regulators and hoses and ensuring that there is sufficient provision for ventilation and clearance from combustibles especially where traders and the public are present. Figure G5 demonstrates an example of a temporary cooking setup found at an outside event. The operator was advised to secure and protect the flexible hoses connecting the portable appliances.

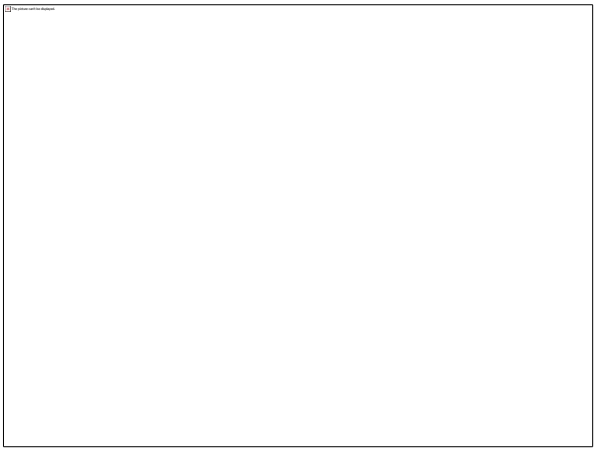


Figure G 5: Example of a damaged gas hose on a temporary cooking

The Technical Regulator typically sends inspectors to patrol public event sites during the set up and then randomly during the event to ensure continuing compliance. The Technical Regulator works closely with inspectors from SafeWork SA and private event safety consultants to educate and improve the safe use of gas. Thus, gas related incidents at public events have declined over time and the safety standards demonstrated have improved significantly.

Figure G6 provides an example of a mobile catering food caravan trading in Adelaide's CBD. Here the portable power generators are installed too close to the gas cylinders and the operator was directed to have the generators relocated to provide the correct clearance from the LPG cylinders.

Figure G 6: Example of non-compliant portable generators

Audits of permanent gas installations at tourist and caravan parks

The Technical Regulator undertakes random auditi to ensure safety of gas installations in caravans and tourist parks are met. Some of these parks are located close to major centres and use natural gas but most use LPG for hot water and cooking as well as for on-site kitchen and laundry facilities.

In addition to communal facilities, the Technical Regulator inspects gas installations in permanently occupied caravans or cabins. Permanent residents pay rent to the park owner for the site but are responsible for their own utility bills as well as any repairs and maintenance to gas installations or appliances. Long term residents are sometimes in lesser financial circumstances and gas installation and appliance maintenance may not be a priority.

The Technical Regulator may, in extenuating circumstances, extend the period allowed for the work to be made compliant provided there is no immediate danger to the resident or neighbours. In unavoidable circumstances, where remedial work cannot be delayed, gas inspectors will either disconnect the gas supply or make an arrangement with the park owner/manager to have the work completed.

The example below shows a cooking facility that required the replacement of the LPG regulator due to gas leaking and rectification of the high-pressure cylinder connection and prohibited jointing.

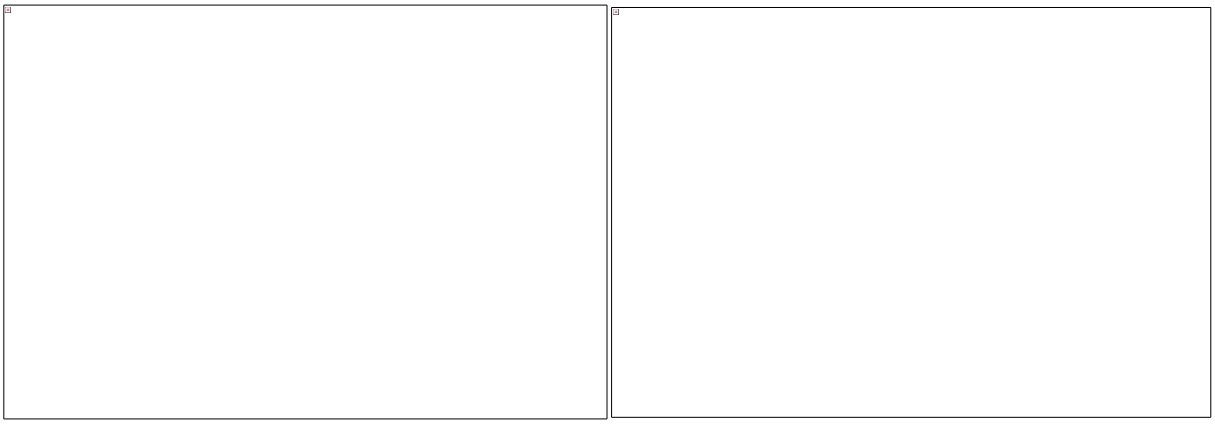


Figure G 7: Example of a communal cooking facility that required modification

Where a caravan is used as permanent accommodation, it is unregistered, and the wheels are usually removed and other structures may also be attached from the ground to the van. In this case the installation is treated as a residential dwelling and not a mobile home. The electricity, water and gas are permanently connected.

Flame Effect Burners used in Public Events or Productions

The Technical Regulator inspects flame effect burner systems and their associated controls that are manufactured or assembled by pyro technicians and / or gas fitters for use in public events such as the Fringe Festival, corporate events, or by playwrights at the Festival Theatre.

Manufacturers and event organisers are made aware of their legal and technical responsibilities in relation to the *Gas Act 1997*, the *Plumbers, Gas Fitters and Electricians Act 1995* and Work Health and Safety (WHS) obligations. Event organisers, operators and flame effect designers and constructors must define the tasks, conditions and limitations of the performance or effect in their designs.

Safe Work Method Statements and Standard Operating Procedures must be formulated and the risks assessed to eliminate/minimise risks of injury or damage to property. Participants must also be provided with appropriate training and Personal Protective Equipment and a hierarchy of controls need to be implemented to manage the risks in setting up, commissioning, operating and decommissioning. All relevant regulatory authorities should be notified of the activity, i.e. MFS / CFS / SafeWork SA / Councils if permits are required.

Enforcement activities for non-compliant gas installations

The Technical Regulator's enforcement activities with respect to non-compliant gas installation work are on a graduated scale which escalates according to the degree of non-compliance found during a proactive audit or as a result of an inspection prompted by a gas consumer complaint or safety report by the trade.

1. **Minor technical non-compliance**

A copy of the audit pro-forma is left with the owner and a non-compliance letter together with a compliance statement is sent to the installation contractor with a request to remedy the situation. A follow up phone call is made to the owner to confirm that the non-compliance has been remedied once the compliance statement is returned by the contractor to the Technical Regulator.

2. **Significant but non-hazardous non-compliance**

A copy of the pro-forma accompanied by a non-compliance letter and compliance statement is sent to the contractor. The letter, asks the gas fitter return to the site within a given time frame, to remedy the non-compliances. The owner is notified that significant remedial work is required. A signed and dated compliance statement must then be sent back to the Technical Regulator by the contractor or owner to confirm that the remedial work has been completed. A follow up inspection may be done at the discretion of the Technical Regulator.

3. **Non-compliance posing an immediate danger to persons or property**

As above, except to make such an installation safe the Technical Regulator's inspector may be required to isolate an appliance or part of the system or cut off the gas supply to the premises. After the defect has been remedied, a signed and dated compliance statement must then be sent back to the Technical Regulator. A follow up inspection will then be carried out. An expiation notice may be issued for defective work. Expiation notices impose a fee plus a victims of crime levy per breach for defective work. An expiation notice may include up to three breaches for any one gas installation job.

4. **Prosecution**

The Technical Regulator may prosecute a contractor where the non-compliance is so serious as to constitute gross negligence or where a contractor has a history of significant non-compliance.

The process is generally as above with the exception that no expiation notice is issued and prosecution is instead proceeded with. The evidence, comprising of various interview/investigation notes, statements, photographs and measurements/observations/reports are gathered.

In some circumstances, the original contractor cannot or will not return to the site to remedy the non-compliance/s due to licensing or commercial issues and sometimes the owner will not allow the contractor back on the site. In these situations, the owner must engage a third-party gas fitter to make the installation compliant. A signed and dated compliance statement must then be sent back to the Technical Regulator and a follow up verification audit will be carried out.

5. Disciplinary interviews / desk top audits

Where repeated non-compliant gas installation work can be attributed to a specific worker or contractor, an interview is arranged. This has been found to generally be a much more effective approach to remedy situations. The interview is carried out with two authorised officers in attendance and is recorded. The aim of the interview is to establish the following:

- To identify and emphasise the seriousness of the breaches.
- To ascertain whether the breaches occurred as a result of negligence or a lack of knowledge.
- If the person was working beyond the scope of their licence and personal competence.

Where a licensing issue is found, the contractor will be referred to Consumer and Business Services (CBS) with a recommendation from the Technical Regulator that disciplinary action is considered to suspend or cancel the gas fitting worker's registration or contractor's licence.

Alternatively, or in addition, a recommendation may be made that the worker or contractor attends remedial upskill training to overcome knowledge/skill deficiencies.

Referrals to CBS

The Technical Regulator has a strong working relationship with the PGE licensing section of CBS, where the Technical Regulator has concerns on competency, or witnesses continual non-compliance of gas installation work by workers or contractors the Technical Regulator will refer these to CBS. Where unlicensed work includes significant non-compliances with the Gas Installation Standards, the Technical Regulator prefers that a joint CBS and Technical Regulator interview be conducted. In addition to any penalty applied by the Technical Regulator, CBS can also apply various sanctions including licence suspension and, in more serious circumstances, licence cancellation.

If a person is found to be performing gas fitting work while unlicensed, CBS may, in serious circumstances, prosecute or as a minimum seek a written assurance that the unlicensed person or entity desists from this work.

11.1.5. Gas incidents – Installations

Gas-related incidents include those involving gas covered under the *Gas Act 1997*, or their products of combustion.

Section 12: Gas Products

The *Energy Products (Safety and Efficiency) Act 2000* is administered by the Technical Regulator and requires certain proclaimed gas appliances to be tested, certified, and labelled before they can be sold, installed, and used in South Australia.

Other Australasian jurisdictions have similar legislation. The Technical Regulator works with other Australasian Regulators and Standards Committees to ensure a nationally consistent gas product safety regulatory regime.

12.1. Gas Appliance Certification

Gas appliances are classified as either Type A (generally mass produced, domestic and light commercial) or Type B (heavy commercial, industrial and often unique utilisation). There are currently five Conformity Assessment Bodies (CAB) that can certify Type A gas products in Australia. They are – the Australian Gas Association (AGA), Standards Australia International Global (SAIG) the International Association of Plumbing and Mechanical Officials R & T Oceana (IAPMO), Global Mark and Vipac Engineers & Scientists. Their commonly sighted certification labels are provided in Figure G10.

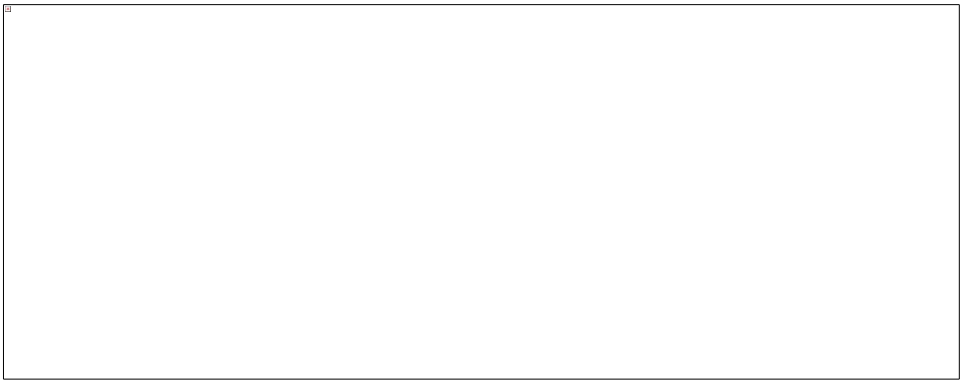


Figure G 8: Certification Label Examples

12.2. Appliances Audit

The Technical Regulator conducts risk based proactive audit for Type A appliances in retail stores. This provides the Technical Regulator with an opportunity to check if the retailers are selling only approved, certified equipment and that their displays provide all the necessary safety information. In addition, it allows the Technical Regulator to check if these retailers have been notified of any product recall or suspensions and if (or whether) they act in accordance with the notice.

The audits are also an opportunity to educate the retailers to only accept certified goods for sale and to pass on the appropriate safety information to their consumers. Where retailers are found to continue the illegal sale of non-certified gas products despite being educated on the topic, the Technical Regulator considers additional measures such as the expiation the retailers and the confiscation of the gas products to avoid reoccurrence and ensure the safety of the community.

How to check whether a gas appliance is certified or not?

If buying directly from a retail outlet, the retailer can be asked to show the data plate on the appliance. Examples of data plates are illustrated in Figure G11. It contains two major indications of gas certification, the certification badge or label and the certificate number. However, if buying a gas appliance online, the certification information

observed below can be verified by asking the provider or by checking on the GTRC National Certification Database.

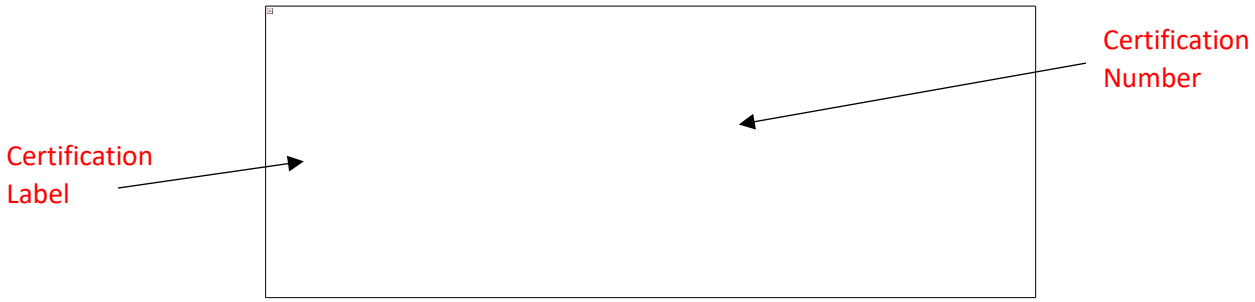


Figure G 9: Information Data Plate including certification number and certification label

12.3. Appliance and Component Recalls and Safety Notices

An approved CAB can suspend or cancel the certification of a gas appliance or component under certain circumstances. Typically, this would occur when:

- The manufacturer wishes to change to an alternate CAB.
- The manufacturer has ceased production of the appliance or component and product certification is surrendered voluntarily.
- The manufacturer has failed to pay ongoing fees or to provide the product to the respective CAB for annual verification inspections or label costs.
- The appliance manufacturer has been found to have modified the appliance, without notifying the respective CAB, so that it does not exactly replicate the appliance as originally certified.
- An appliance has been modified in a way that affects its safety or reliability. Where this happens, Technical Regulators will call for a product recall or safety notice to be released.
- An appliance is found to be defective in service to a point where it is likely to create a hazard (this does not include normal wear and tear or the lack of maintenance by the operator). Where this happens, the Technical Regulator will expect a product recall or safety notice.

Note – certification may be reinstated if the manufacturer satisfactorily remedies the non-compliance.

Section 13: Gas Regulatory Coordination

13.1. Safety and Technical Standards

The Technical Regulator contributes to national and joint, Australian and New Zealand, standards committees for gas, helping shape and maintain safety and quality requirements. These standards set minimum requirements for gas quality, infrastructure design, installation, operation, and maintenance ensuring safe, reliable gas supply across the network.

13.2. Committee Representation

The Technical Regulator actively contributes to Standards Australia and other key industry committees, forums, and associations. The Technical Regulator has been, and continues to be, directly involved in the development and promotion of several industry technical Standards. Several staff members represent the Technical Regulator on the key Standards committees generally on behalf of the GTRC. The resultant Standards are called up into legislation administered by the Technical Regulator. These standards help set clear safety and technical requirements, supporting consistent enforcement and safer gas operations.

13.2.1. Gas Technical Regulators Committee (GTRC)

The Technical Regulator works closely with other regulators across Australia and New Zealand through the GTRC, which meets twice a year. This collaboration supports the sharing of technical knowledge, safety concerns, and regulatory consistency.

Issues featuring highly included the pursuit of a set of “Rules” that can attempt to harmonise requirements across jurisdictions and provide consistency of information to CABs and other stakeholders. The Rules, when recognised by a Technical Regulator, will provide a set of requirements for the operation of a certification scheme when read in conjunction with each jurisdiction’s legislation.

The GTRC also tracks issues related to carbon monoxide (CO) risks from faulty gas appliances. CO is a colourless, odourless, and deadly gas, often called the silent killer. GTRC highlights the importance of safe appliance operation and public awareness.

13.2.2. AG-006, Gas Installation Committee (AS/NZS 5601 & AS 4575)

AG-006 Gas Installation Standards Committee consists of groups of experts who help write and update important gas safety standards like AS/NZS 5601 (for installing gas systems) and AS 4575 (for servicing gas appliances).

The committee includes:

- Technical regulators
- Gas suppliers, utilities/network operators and appliance manufacturers
- Trade, trainers and installers
- Industry bodies such as Master Plumbers Association, the Plumbing Industry Commission and the Australian Building Construction Board (ABCB).

They work together to make sure the standards are practical, safe, and reflect current industry needs. The Technical Regulator acts as a link between the committee and the wider industry, helping share feedback and updates.

AS/NZS 5601

The purpose of the committee is to maintain Part 1 Gas installation – general installations and Part 2 LPG installations in caravans and boats for non-propulsive purposes. The activity in amending these documents is as a result of new innovations and changes to building and work practices, to advancements in materials and appliance technology.

AS 4575

The committee has been authorised to fully revise the aged Standard AS 4575 Quality of Gas Servicing. The revision is a result of new innovations, changes, work practices, advancements in materials and appliance technology. The scope of the Standard will be expanded to include worksite hazards, scoping work, appliance isolations, electrical safety, servicing protocols including fault diagnosis, testing, verification and commissioning in addition to records management and quality systems.

13.2.3. AG-001, Gas Appliances Committee

The committee develops and maintains the AS/NZS 5263 series of standards for domestic and light commercial gas appliances, known as Type A gas appliances (like home heaters and cooktops). These Standards cover the technical, safety and performance requirements.

Standards are being developed in an attempt to avoid the need to provide a new Standard for every new gas appliance that comes out on the market. They concentrate on the fundamental safety principles of all gas appliances especially things like combustion and temperature hazard requirements and relate them across all gas appliances.

This approach has been adopted by New Zealand and now they are a joint AS/NZS 5263 series of Standards. The Technical Regulator has made a major contribution to this process and the changes that are being made in the gas appliance certification process in the future.

13.2.4. AG-008, Gas Distribution Committee (AS/NZS 4645)

The joint Australia and New Zealand Standards Gas Distribution Committee (AG-008) provides input in developing further revisions to some parts of the Australian/New Zealand Standard AS/NZS 4645 ‘Gas distribution networks’ to ensure safe, reliable and affordable gas distribution systems. These parts are: Part 1: – ‘Network Management’, Part 2: – ‘Steel Pipe Systems’ and Part 3: – ‘Plastic Pipe Systems’. AG-010, Natural Gas Quality Specifications Committee (AS 4564).

13.2.5. AG-038, Liquefied Petroleum Gas Quality Specifications Committee (AS 4670)

The function of AG-038, the LPG Quality Specification Committee, is to maintain AS 4670 Commercial propane and commercial butane for heating purposes. This sets out the gas quality requirements necessary to ensure the suitability of the liquefied petroleum gas for heating purposes.

13.2.6. AG-010, Natural Gas Quality Specifications Committee (AS 4564)

The function of AG-010, the Gas Quality Specification Committee, is to maintain the AS 4564 specification for general purpose natural gas. This specification sets out the gas quality requirements necessary to ensure the safety of general-purpose natural gas transported and supplied for use in natural gas appliances and equipment, and for use as fuel in natural gas vehicles.

National Gas Emergency Response Advisory Committee (NGERAC)

Originally, the then Ministerial Council on Energy (MCE) developed a National Gas Emergency Response Protocol. Energy Ministers now provide national oversight and coordination of energy sector decision-making and energy market reform.

In Australia, a large proportion of the national gas supply network is interconnected across most State and Territory borders and Energy Ministers seek to facilitate the development of a more reliable, secure, and competitive national gas market. Energy Ministers have agreed that a National Gas Emergency Response Protocol ("the Protocol") should be retained to ensure natural gas supply disruptions are managed in a consistent manner across all jurisdictions.

The Protocol contains two main elements:

- Arrangements for inter-jurisdictional consultation on the use of statutory emergency powers in the event of a major natural gas supply shortage.
- Establishment of a government-industry National Gas Emergency Response Advisory Committee (NGERAC). The NGERAC usually meets twice each financial year.

During a major national gas supply shortage NGERAC will be a key source of information and advice, but not necessarily the only source for Energy Ministers and jurisdictions. The advice provided by the collective committee will seek to ensure efficient and effective responses to and management of major natural gas supply shortages (including the use of Emergency Powers). This advice is based on the need to be timely and to be consistent with maintaining the integrity of the gas supply system and public health and safety.

In the event of a major natural gas supply shortage, market and commercial arrangements are to operate as far as possible to balance gas supply and demand as well as maintaining system integrity. NGERAC would be activated (time permitting) to assist in an event of a potential or actual multi-jurisdictional gas supply shortage or where a single impacted jurisdiction has requested that the NGERAC be convened for the purpose of sharing information.

Volume III – Water Industry

Preface

This volume covers the Technical Regulator's operations under the *Water Industry Act 2012.*

Water Industry Act 2012

Section 3 of the *Water Industry Act 2012* states that:

"The objects of this Act are—

(a) to promote planning associated with the availability of water within the State to respond to demand within the community; and
(b) to promote efficiency, competition and innovation in the water industry; and
(c) to provide mechanisms for the transparent setting of prices within the water industry and to facilitate pricing structures that reflect the true value of services provided by participants in that industry; and
(d) to provide for and enforce proper standards of reliability and quality in connection with the water industry, including in relation to technical standards for water and sewerage infrastructure and installations and plumbing; and
(e) to protect the interests of consumers of water and sewerage services; and
(f) to promote measures to ensure that water is managed wisely."

The Technical Regulator is established by section 8 of the *Water Industry Act 2012*.

Section 9 of the *Water Industry Act 2012* provides:

"The Technical Regulator has the following functions:

(a) to develop technical standards in connection with the water industry;
(b) to monitor and regulate technical standards with respect to—
  (i) water and sewerage installations and associated equipment, products and materials (including on the customer's side of any connection point); and
  (ii) plumbing;
(c) to provide advice in relation to safety or technical standards—
  (i) in the water industry to the Commission at the Commission's request; and
  (ii) in the plumbing industry;
(d) any other function assigned to the Technical Regulator under this or any other Act or conferred by regulation under this Act."

The aim of the *Water Industry Act 2012* is "to facilitate planning in connection with water demand and supply; to regulate the water industry, including by providing for the establishment of a licensing regime and providing for the regulation of prices, customer service standards, technical standards for water and sewerage infrastructure, installations and plumbing, and by providing performance monitoring of the water industry; to provide for other measures relevant to the use and management of water; to make amendments to various related Acts; to repeal the *Sewerage Act 1929*, the *Water Conservation Act 1936* and the *Waterworks Act 1932*; and for other purposes".

The Technical Regulator provides input and is involved in a range of activities in liaison with the water industry and other government agencies.

Section 14: Water and Sewerage Infrastructure

14.1. Introduction

Infrastructure is defined as the structures, systems and facilities that service the community, and water and sewerage infrastructure is the infrastructure into which the plumbing contractors connect on-site plumbing (including drinking water, non-drinking water (recycled water) and drainage installations).

Water and sewerage infrastructure includes but is not limited to:

- Drinking water distribution systems.
- Drinking water treatment and storage facilities.
- Sewage collection systems.
- Sewage treatment and storage facilities.
- Community wastewater management collection systems (CWMS).
- Wastewater treatment and storage facilities.
- Non-drinking water distribution systems.
- Non-drinking water treatment and storage facilities.
- Non-drinking water harvesting and reuse systems.

Water and sewerage infrastructure that provides a service to a customer is typically the responsibility of a water industry entity (such as SA Water, local Council, or a private company). By comparison, on-site plumbing, drainage, and associated equipment downstream of the meter or property connection is the responsibility of the property owner.

14.2. Water Industry Entities

A water industry entity is defined in the *Water Industry Act 2012* and designates any entity providing water and/or sewerage retail services in South Australia. There are three main categories of water industry entities: major, intermediate, and minor, which are based on connection numbers (a full list of entities can also be found on the Commission's website).

There are currently 72 licensees in South Australia and a total of 68 Water Industry Entities (four water industry entities have two separate licences) across the three categories as presented in Figure W1 (for full list see Appendix 5). There is a single major water industry entity in South Australia being SA Water.

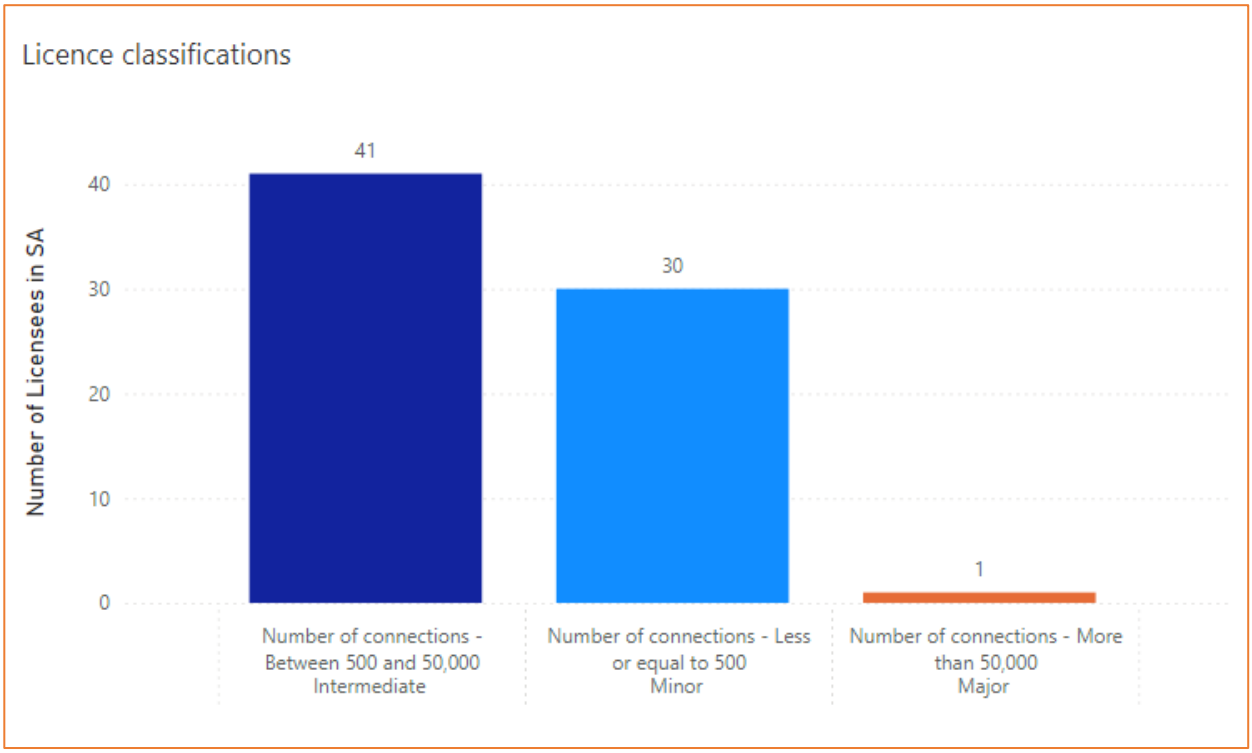


Figure W 1: Licence Classification

SA Water provides drinking water and sewerage services to more than 1.7 million people in SA. The remaining water industry entities are classified as intermediate and minor as per Figure W1 and provide services across the whole of South Australia servicing metropolitan, outer metropolitan and regional townships, as presented in Figure W2.

Figure W 2: Water industry entities per region in South Australia

The split between the services provided by the water industry entities is presented in Figure W3.

Figure W 3: Split between services provided by water industry entities in South Australia

Of the current 68 water industry entities in South Australia, most provide sewerage services (80% of all entities) via Community Wastewater Management Schemes (CWMS), formerly known as Septic Tank Effluent Disposal Schemes (STEDS). These schemes typically comprise a gravity drain collection network (connecting to customers' on-site septic tanks), which convey all of the septic tank effluents to a treatment system and disposal facility. CWMS are typically owned, operated and managed by local Councils as the water industry entity.

In addition to drinking and sewerage services, water industry entities can provide non-drinking water services which include the distribution of non-drinking water for irrigation and non-drinking water use, such as toilet flushing.

14.3. Regulation of Water Industry Entities

Water industry entities must provide their Safety, Reliability, Maintenance and Technical Management Plan (SRMTMP) to the Technical Regulator in accordance with the *Water Industry Act 2012* and *Water Industry Regulations 2012*.

The SRMTMP shall include the following matters, as a minimum:

- Safe design, installation, commissioning, operation, maintenance and decommissioning for water and/or sewerage infrastructure owned or operated by the water industry entity.
- Maintenance of water and/or sewerage services of the quality required to be maintained by or under the *Water Industry Act 2012*, the *Water Industry Regulations 2012*, licence or other conditions.

- Monitoring compliance with safety and technical requirements imposed by or under the *Water Industry Act 2012*, the Regulations, licence or the conditions of any exemption.
- Monitoring water and/or sewerage infrastructure owned or operated by the water industry entity that is considered unsafe or at risk of failing or malfunction.
- Establishment of indicators and the collection and recording of information to measure the water industry entity's performance.

SRMTMPs are 'live' documents and any changes and/or revisions are required to be approved by the Technical Regulator.

Following the submission and subsequent approval of a SRMTMP by the Technical Regulator, the water industry entity must complete audits as described in Sections 2.3.1 and 2.3.2.

SRMTMP Assistance

The SRMTMP Guidance Document and Example Document, updated in May 2024, provide advice and assistance to water industry entities for the development of their SRMTMP that is acceptable to the Technical Regulator and deemed to comply with the *Water Industry Act 2012* and *Water Industry Regulations 2012*. The focus is placed on safe and reliable operation for people and plant to ensure a safe and reliable service to customers.

14.3.1. National Performance Reporting

The National Performance Report (NPR) framework supports commitments made by states and territories under the National Water Initiative (NWI), to report publicly and independently on the performance of urban water utilities.

The NPR is published annually and prepared independently by the Bureau of Meteorology (BoM), State and Territory governments, and the Water Services Association of Australia.

From 1 July 2021, the OTR became one of two South Australian Jurisdictional Coordinators for the NPR. The OTR is responsible for operational aspects of the NPR in SA, being a point of contact for the BoM, assisting with data coordination, auditing, and participation in Framework reviews.

A major review of the NPR Framework was undertaken in 2019 and as a result a set of recommendations were delivered to ensure the NPR's relevance and value into the future. In response to some of the recommendations an Indicator Review was undertaken in 2021 which sought to identify a set of nationally relevant and future focused themes, outcome areas and reporting metrics.

Previously service providers across Australia with more than 10,000 connections have reported to the NPR. The recommendations from the NPR indicator review indicated broad support across Australia for the inclusion of entities with less than 10,000 connections to provide performance reporting data to the NPR. The indicator review's recommendations were endorsed in all States and Territories at a national level and a subset of indicators for service providers with less than 10,000 connections was approved in 2023.

Service providers with less than 10,000 connections began collecting data from the start of the 2024-2025 financial year and reporting against the NPR Indicators commenced on 1 July 2025. Guidance materials for 2024-25 reporting have been published on the BoM's NPR website. Through its role as joint jurisdictional coordinator the OTR will provide support and education as well as communicating any new updates as they occur.

For the 2024-25 reporting year the OTR introduced the Statewide Water Information Management (SWIM) system for state and federal water industry reporting requirements in South Australia. The OTR will be supporting the use of the SWIM annual online data portal for water industry entities in SA. The SWIM system will allow entities to centrally report data to the OTR, SA Health Wastewater, NPR, and the Australian Bureau of Statistics Water Supply and Sewerage Services Survey (ABS WSSS).

The SWIM system was developed by *qldwater* (The Queensland Water Directorate), the central advisory and advocacy body within Queensland's water industry. SWIM has been successfully used in Queensland by service providers for reporting their state and federal data since 2007-8.

The SWIM online portal will provide the following benefits to water industry entities in SA:

- Streamlined reporting of state and federal reporting requirements.
- Making it easier to meet data reporting requirements by coordinating data requests from the various agencies into a single data request.
- Data is submitted once per year into SWIM and is then sent by SWIM to the right department, at the right time and in the correct format.
- Up-to-date reporting requirements. If changes occur (new/removed indicators, changes to definitions, etc.) they will be reflected in SWIM to ensure the correct data is provided each year.
- In built Quality Assurance (QA) and Quality Control (QC), which will assist in improving data quality.

In May 2025 the OTR in conjunction with ***qldwater*** facilitated four SWIM and NPR training sessions. The sessions provided in depth overview on how to use the SWIM system as well as an overview of reporting requirements in SWIM with a focus on NPR reporting.

14.4. Water and Sewerage Infrastructure Incidents

14.4.1. Water and Sewerage Infrastructure Incident Classification and Notification Protocol

There is a Water and Sewerage Infrastructure Incident Notification and Communication Protocol, updated in January 2024, which provides water industry entities with a clear understanding of their notification and reporting requirements to the Technical Regulator. The Protocol is an overarching document, is applicable to all water and sewerage infrastructure and provides incident classification and notifications requirements. The protocol does not absolve the entities from responsibilities to any other agencies, such as those that are included in the Department for Health and

Wellbeing (DHW) / Environment Protection Authority (EPA) Water/Wastewater Incident Notification and Communication Protocol or other similar documents.

Water Industry Entities have been provided an Incident Notification Form Template to ensure all necessary data on the reported incident is captured. The OTR has also developed an Incident Register Template to promote the best practice of incident record keeping and is required to be submitted to the OTR on request.

The Technical Regulator periodically updates the protocol to ensure that the information is current and accurately reflects all water and sewerage infrastructure incidents and regulatory requirements.

14.4.2. Other Incident Classification and Notification Protocol

The Technical Regulator is also included in the DHW and EPA Water/Wastewater Incident Notification and Communication Protocol as a notifiable agency. This Protocol is specific to SA Water, EPA and DHW and was first established in 1999. This protocol meets the *Safe Drinking Water Act 2011* requirements for an approved incident identification and notification protocol.

Section 15: Plumbing Installation

15.1. Plumbing Regulation

The *Water Industry Act 2012* and the *Water Industry Regulations 2012* provide the legislative framework for the regulation of the on-site plumbing industry in South Australia. The Technical Regulator monitors and regulates plumbing and associated equipment, under section 9 of the *Water Industry Act 2012*. On-site plumbing installations are audited for compliance with the Performance Requirements of the National Construction Code (NCC) Volume 3 – Plumbing Code of Australia (PCA). Plumbing categories the OTR monitors and regulates, though on-site audits are listed on Table W 1.

Table W 1: Plumbing categories that are monitored and regulated through on-site audits

Plumbing Regulation Category	Sub-categories / Notes
Water Services	- Cold Water Services - Heated Water Services - Non-Drinking Water Services - Fire-fighting Water Services
Sanitary Plumbing & Drainage Systems	- Sanitary Drainage Systems - Stormwater Drainage Systems - Trade waste
Onsite Wastewater Systems	-Onsite Wastewater Management System -On-site Liquid Management System
Material and Products Certification	-WaterMark Certification Scheme for Plumbing Materials and Products

15.2. Plumbing Compliance

The Technical Regulator is responsible for monitoring and regulating technical Standards with respect to on-site plumbing. Plumbers constructing, installing, replacing, repairing, altering and maintaining pipes or any other equipment, products or materials used in connection with plumbing are required to book these installations for audit with the Office of the Technical Regulator.

The Technical Regulator undertakes routine sample audits of plumbing installations, non-compliant plumbing installations are rectified to ensure technical compliance with the Plumbing Standard issued by the Technical Regulator under section 66 of the *Water Industry Act* 2012.

Testable backflow prevention devices on the customer's side of any water connection point must be commissioned and tested after installation in compliance with AS 2845.3.

Figure W 4: Details of plumbing obligations under the Water Industry Act 2012

15.3. Plumbing Audits

15.3.1. Plumbing Bookings and Audits

The Technical Regulator audits plumbing installations in South Australia for compliance with the Plumbing Standard published pursuant to section 66 of the *Water Industry Act* 2012. This Standard has adopted relevant sections of the Plumbing Code of Australia (PCA). All plumbing installations must meet the performance requirements of the PCA through the deemed-to-satisfy solutions set out in the AS/NZS 3500 plumbing and drainage Standard Suite or by satisfying the performance requirements set out in the PCA.

The plumbing installations audited can range from the addition of a toilet en-suite, a residential home, to more complex commercial installations within shopping centres or multi-storey high-rise apartments. Final audits of complete plumbing installations are undertaken to monitor more complex multi-storey installations or in situations where ongoing non-compliance has been identified.

Auditing Policy

The Technical Regulator selects sites for auditing by:

- Scheduling a random selection of sites by relying on the integrity of the Plumbing case management system to identify all plumbing work being performed through the booking process.
- Focussing on a particular category of plumbing, based on the risk involved e.g. maintaining a regular presence in the south-east region, where there are currently no local inspectors, by scheduling periodic visits from head office and maintaining a strong focus on non-drinking water installations and backflow protection.
- Responding to complaints from either the public or plumbing industry.
- Responding promptly to emergency situations.
- Failed jobs cases are monitored through a fortnightly review allowing the Technical Regulator to ensure all outstanding non-compliant installations are accordingly rectified.

Plumbing audits booking system

The Technical Regulator maintains a plumbing case management system to record information relating to on-site plumbing audits. This system records the plumbers audit

request dates and the results of the audits carried out by the OTR plumbing installation officers.

Commercial and industrial plumbing inspections include:

- Above-Ground Sanitary.
- Backflow Audits.
- Drainage.
- Encumbrance Investigations.
- Final Inspections.
- Fire Services.
- Hot & Cold Installation.
- Hot Water.
- Rainwater Inspection.
- Non-Drinking Water In-Ground.
- Non-Drinking Water In-Wall.
- Non-Drinking Water – Investigations.
- Sewer Investigations.
- Site Meetings/Inspections.
- Trade Waste Plumbing.
- Underfloor Plumbing.
- Water Inspections/Investigations.
- FPAA101D Sprinkler Systems.
- Hydraulic Design Submissions

Residential/ Recreational Park plumbing inspections include:

- Above-Ground Sanitary.
- Drainage.
- Final Inspections.
- Fire Services.
- Hot & Cold Water.
- Recycled Water In-Wall.
- Hot & Cold Installation.
- Hot Water.
- Rainwater Inspection.
- Non-Drinking Water In-Ground.
- Non-Drinking Water In-Wall.
- Sewer Investigations.
- Site Meetings/Inspections.
- Trade Waste Plumbing.
- Underfloor Plumbing.
- Non-Drinking (New Meter Connections)
- Non-Drinking Water – Investigations.
- Non-Drinking Water - Recreational Parks and Gardens

15.3.2. *Policy for Acting on Non-Compliance*

In each case of non-compliance, the seriousness of the offence is assessed by:

- Assessing the technical compliance of the plumbing work presented with the plumbing installation performance requirements set out under the Plumbing Code of Australia.
- Determining the technical and safety aspects of the non-compliant plumbing work for both the customer concerned and the public.
- Identifying what actions are required to address the cause and correct the condition.

Once the seriousness of the breach is determined, the Technical Regulator acts on the non-compliance according to the severity of the breach by taking escalating measures such as:

- Education.
- Warning.
- Notice to rectify in the form of enforcement notices.
- Enforcement Notice against the affected property.
- Issuing an Expiation Notice to the Plumbing Contractor.
- Prosecution for the most serious offences.

15.3.3. Inter-Agency Referrals to Consumer and Business Services

The Technical Regulator regularly refers to the Consumer and Business Services (CBS) website to monitor plumbers' registration and contractor licence details to ensure plumbers are appropriately licensed as per the requirements of the *Water Industry Act* 2012. The Technical Regulator additionally advises CBS where a plumber is operating outside of the scope of their trade license.

15.3.4. Fees for Reinspection

The Technical Regulator has introduced a reinspection fee to be charged to plumbing contractors who must rectify non-compliant plumbing work and re-submit the installations for further auditing.

The reinspection fee is commensurate with the reasonable costs associated with on-site re-inspections. A service fee can be charged in accordance with regulation 35(1)(a) of the *Water Industry Regulations* 2012:

If-

> *(a) a person's acts or omissions require the Technical Regulator (or a person acting on behalf of the Technical Regulator) to undertake a reinspection of any work, or to re-attend at any place for any other reason, in connection with the operation or requirements of a standard under Part 7 of the Act,*

the person is liable to pay a fee of an amount equal to the reasonable costs of the reinspection or reattendance (as the case may be).

Fees are payable via cheque, money order, credit card or B-Pay and the plumbing work must not be covered over until the reinspection has occurred and the work is compliant.

15.3.5. Expiation Notices

Regulation 41 of the *Water Industry Regulations 2012* provides for the issuing of expiation notices for breaches against the *Water Industry Act 2012*, allowing the Technical Regulator to enforce compliance of plumbing work.

While the decision to issue an expiation notice is not taken lightly, it is used on occasions where the technical and safety aspects of an on-site plumbing and equipment installation place the customer or the integrity of the property at risk.

Non-drinking water installations have the potential to compromise public health through contamination of the drinking water network supply.

While every effort is made to work with the plumbing industry to assist plumbers in complying with the Plumbing Standard, it is ultimately up to the certifying plumber to ensure that their work is compliant.

15.3.6. Hydraulic design submissions

The Office of the Technical Regulator requires hydraulic designs for sanitary plumbing and drainage installations to be submitted prior to the commencement of work onsite for commercial and complex residential projects. These designs are reviewed to support the

OTR's auditing processes and serve as a valuable reference for industry advice and compliance verification.

The Technical Regulator requires plumbers to submit hydraulic designs submissions for the following types of developments:

- Commercial and industrial developments, including extensions.
- Multi-storey developments of three or more floor levels.
- Building developments within the Adelaide CBD.
- Housing developments of three or more dwellings.
- Developments that include a Performance Based Solution as part of the design.
- Non-drinking water irrigation installations for recreational and commercial/industrial sites, and residential sites.
- FPAA101D sprinkler systems.
- Inground fire hydrant systems.

The lodgement of hydraulic designs and the subsequent booking of inspections by the plumbing contractor is an important part of monitoring and regulating on-site plumbing. The hydraulic design submission process encourages compliant and safe plumbing work particularly in major developments across the State. Smart hydraulic design, in accordance with the National Construction Code Volume 3 (Plumbing Code of Australia), ensures durability, ongoing quality and economic value for commercial developments within the Adelaide CBD and across South Australia. Design plans can additionally identify the use of compliant products and materials on the customer's side of an installation.

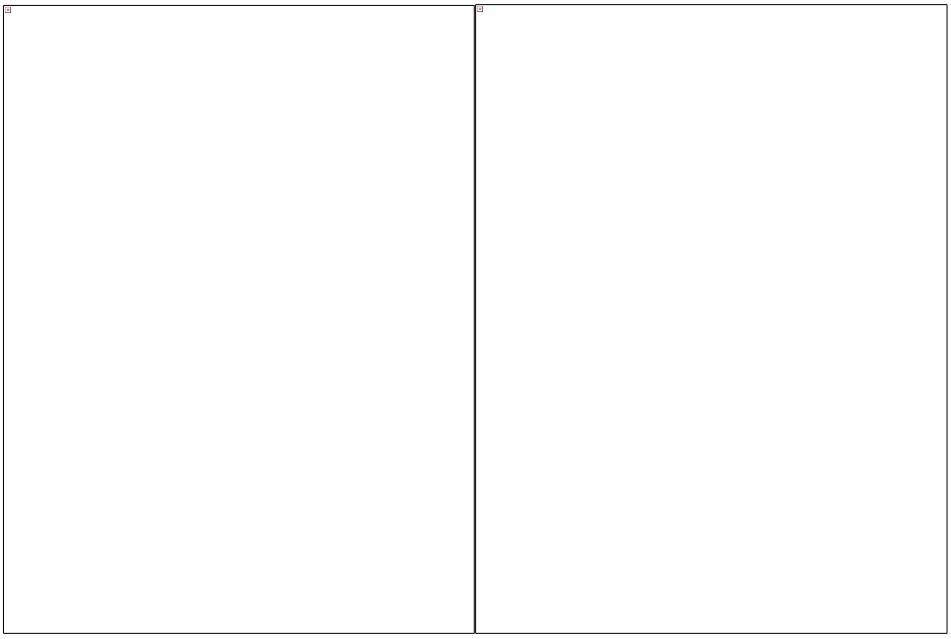


Figure W 5: Examples of Plumbing and Drainage Installations

15.3.7. Metropolitan Areas

Most plumbing bookings of on-site sanitary underfloor and drainage inspections are undertaken in the metropolitan areas and include sanitary underfloor and drainage inspections, related to residential and commercial developments.

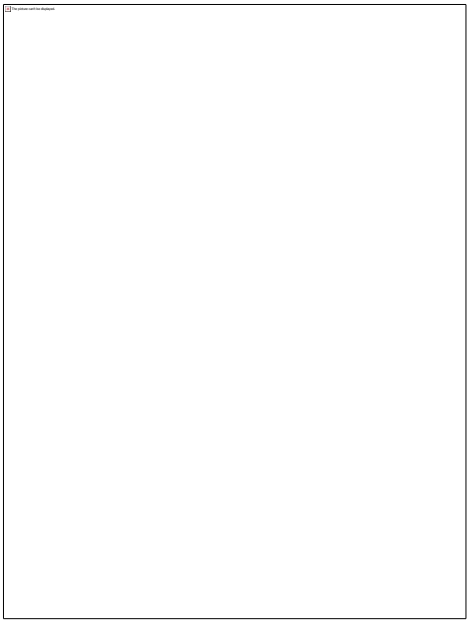


Figure W 6: Commercial Drainage Installation

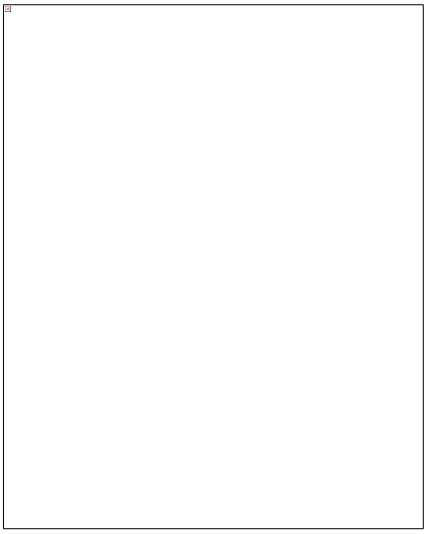


Figure W 7: Victoria Towers Project

15.3.8. Regional Areas

The Technical Regulator has maintained a regulatory presence in regional areas through programmed audits of on-site plumbing. The Technical Regulator has one full-time Regional Plumbing Installations Inspector based in Port Pirie. This inspector conducts audits of plumbing installations north of Adelaide including the Mid North and Eyre Peninsula regions.

Regional areas including the Barossa, Murraylands and the Southeastern areas of the State are monitored by Adelaide-based plumbing installations inspectors. This requires targeted regional visits to areas such as the Riverland, Kangaroo Island, Mount Gambier, Port Lincoln and the Yorke Peninsula.

The Technical Regulator is dedicated to ensuring the integrity of the State's drinking water supply and continues to highlight non-compliance issues and provide standard updates to the Department for Health and Wellbeing and those local councils

responsible for auditing on-site wastewater systems where the plumbing and equipment are not connected to SA Water's sewerage/water infrastructure.

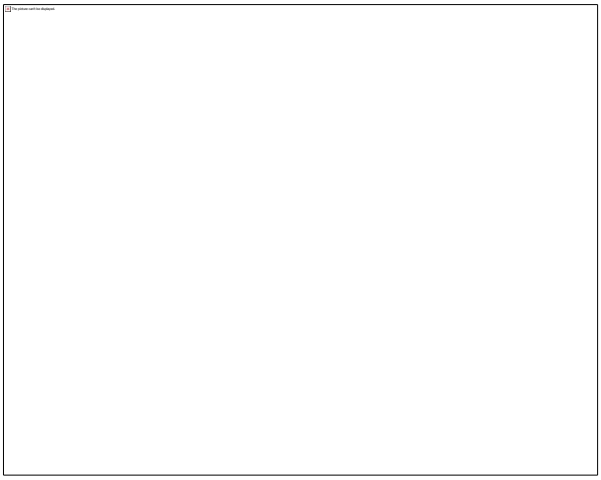


Figure W 8: Technical Regulator audit of inground fire system

15.4. Non-Drinking Water (Recycled Water)

Non-drinking water is water that has been generated from sewage, greywater or stormwater systems and treated to a standard that is appropriate for its intended use. In South Australia, recycled water is typically provided by a water industry entity through a reticulated water network system to dedicated properties for use. Most properties supplied with recycled water have a dual supply consisting of a drinking water supply for personal hygiene use and a non-drinking water supply (recycled water) for gardens and non-personal hygiene use.

In South Australia, the number of non-drinking water sources has increased with many residential developments (i.e. subdivision) adopting dual water reticulation services to properties. Consequently, this has dramatically raised the risk to the technical and safety integrity of on-site plumbing and non-drinking water infrastructure systems. Ensuring a safe drinking water network is paramount to the health of the community which is why non-drinking water systems require appropriate management systems to be in place to prevent cross-connection of drinking and non-drinking water supplies.

Water industry entities, consultants, landscapers, irrigators, plumbers and property owners involved with non-drinking water systems are to comply with requirements as set out in the *Water Industry Act* 2012 and associated legislation. The Technical Regulator conducts numerous training and education sessions with the industry to raise awareness of their responsibility to ensure non-drinking water system installations are compliant. Figure W 9 shows most of the metropolitan areas supplied with non-drinking water in South Australia.

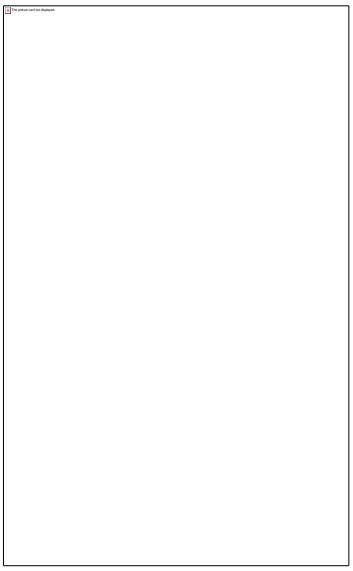


Figure W 9: Areas of metropolitan Adelaide with non-drinking water

Systems can vary in complexity, and it is imperative that the industry is made aware of their obligation to ensure the integrity of both the water infrastructure and on-site plumbing systems. The requirement to upskill plumbers in this particular area has become evident through the number of non-compliant non-drinking water installations audited by the Technical Regulator.

All non-drinking water infrastructure and plumbing installations require appropriate warning and prohibition signage indicating that the non-drinking water is not suitable (fit) for human consumption in accordance with AS 1319 as shown in Figure W10.

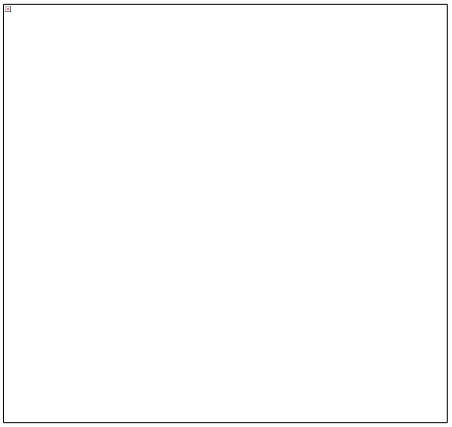


Figure W 10: example of non-drinking water signage

The Technical Regulator requires the submission of a detailed plan for all sites with multiple water supplies. These must include information showing appropriate backflow prevention devices and accurate hydraulic designs showing there are no cross-connections between the drinking and non-drinking water services.

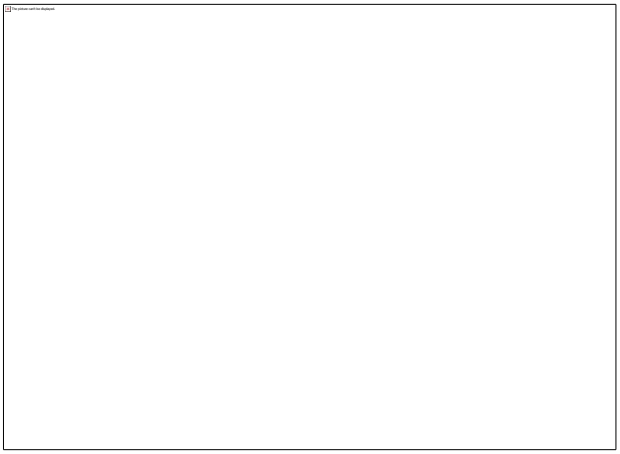


Figure W 11: Typical irrigation installation with Registered Break Tanks installed

Figure W12 demonstrates a typical drinking water/non-drinking water installation on a community title development with appropriate signage and physical separation of services. Typical connection manifold to non-drinking water supply to recreational parks.

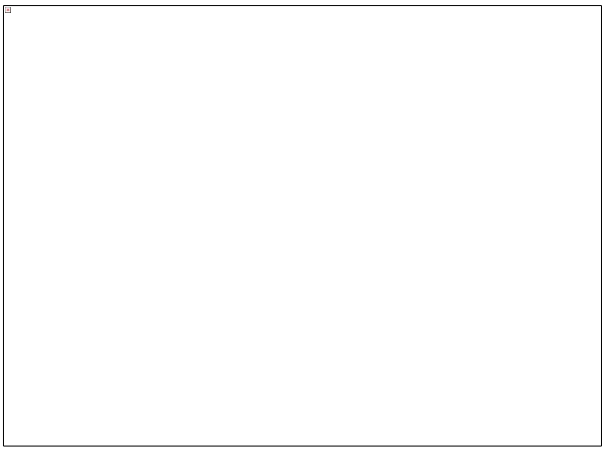


Figure W 12 : Reduced pressure zone valves installation

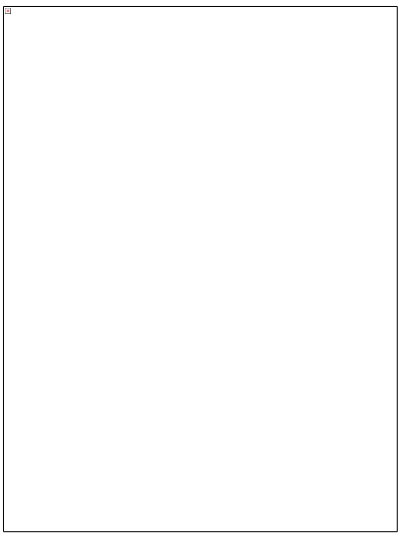


Figure W 13 : Plumbing pipework showing in-ground non-drinking water

15.5. Fire Fighting Water Services

15.5.1. Compliance of fire hydrant water services

The Technical Regulator regulates in-ground fire water service installations. Fire hydrant water services must comply with the PCA and referenced Standards AS/NZS 3500.1 – Water Services and AS 2419.1 – Fire Hydrant Installations – System Design, Installation and Commissioning.

The current Standard requirements mandate that a booster assembly is constructed with WaterMarked products i.e. isolating and backflow prevention valves. There is also a requirement that all materials upstream (inlet side) of the backflow prevention valve be suitable for contact with drinking water. This requirement is covered by AS/NZS 4020 – Testing of products for use in contact with drinking water. Where existing fire services are replaced or upgraded, they must meet current regulatory requirements.

The Technical Regulator has audited many sites where major additions and alterations have required fire hydrant water service extensions and, in turn, an upgrade to the inlet/booster connections. These audits, along with advice from the Technical Regulator, have resulted in a higher level of compliance in this area. The audits are to ensure the correct pipework including the backflow prevention device is installed and the system is hydrostatically tested at 1700 KPa for a period of two hours.

Following the audit, the contractor must submit a plan of the work carried out along with a Certificate of Compliance to the OTR. This information is then forwarded to the Metropolitan Fire Service who then conduct a flow test of the system.

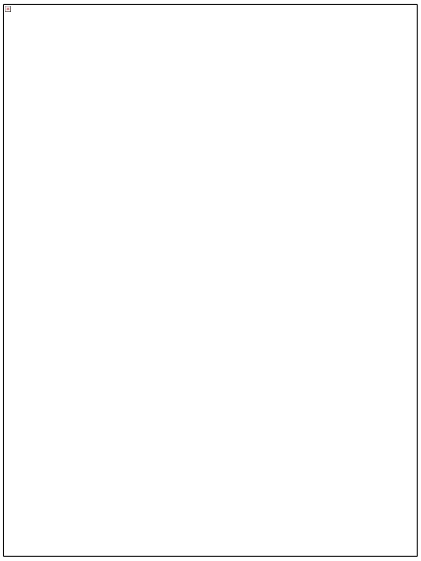


Figure W 14: Fire Service Installation with Backflow Prevention Device

Example of a variation to a fire hydrant booster

Fire hydrant booster assemblies can vary depending on the requirements for a particular site. The Technical Regulator conducts sample audits of these installations to ensure they comply with the appropriate Standards. An example of a combined fire and sprinkler service connected within the booster assembly installed with compliant valves is shown in Figure W15.

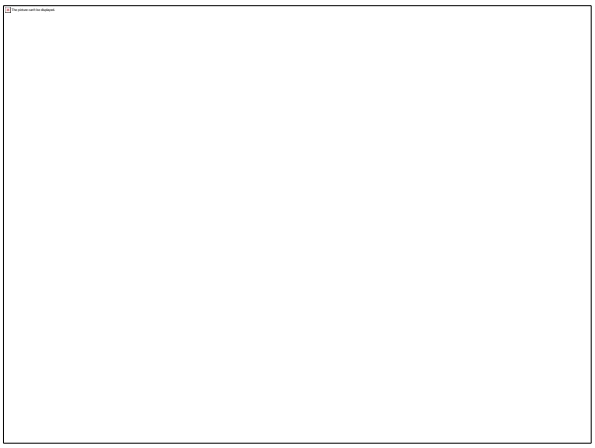


Figure W 15: Variation to a standard fire hydrant booster service

There are several aspects of this combined fire booster which have been designed to comply with the performance requirements of the NCC. The installation includes a WaterMarked testable backflow prevention device on the inlet or upstream side of the connection to the Water Entity's supply. The feed hydrant riser is constructed of copper which is compliant with AS/NZS 4020, the Standard for "Materials in contact with drinking water".

All valves in the combined booster assembly are required to be WaterMarked, including the backflow prevention full flow, non-return and isolating valves.

15.6. Cross-connection Control and Backflow Prevention

The Technical Regulator monitors drinking water and non-drinking water service installations for compliance with the performance requirements of the National Construction Code Volume Three. The Technical Regulator's Cross-Connection and Backflow Prevention Program is the primary method of ensuring that testable backflow prevention devices are installed to protect the integrity of the drinking water supply (see Figure W 16).

The National Construction Code Volume 3 specifies the performance requirements for drinking and non-drinking water systems. AS/NZS 3500.1 is the deemed-to-satisfy provisions for ensuring the performance requirements are achieved.

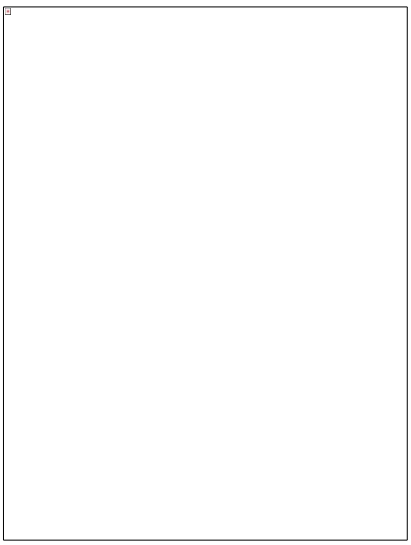


Figure W 16: Interactive Waterplay Playground at a shopping centre

AS/NZS 3500.1 defines a cross-connection as any connection or arrangement, physical or otherwise, between any drinking water supply either directly or indirectly connected to a water main, and any fixture, storage tank, receptacle, equipment or device through which it may be possible for any non-drinking water used, unclean, polluted or contaminated water, or any other substance, to enter any part of a drinking water supply.

For example, a cross-connection in a residential house can be described as a connection between a household drinking water supply and a contaminated source such as an unprotected irrigation system where pesticides or fertilizers can enter the drinking water system or installation of douche toilet seats without appropriate backflow prevention devices being installed. Figure W 17 is an example of Reduced Pressure Zone Backflow Devices in-wall stainless steel tundish box.

Figure W 17: Reduced Pressure Zone Backflow Devices

The Technical Regulator maintains a register of approximately 32,000 backflow prevention devices installed on drinking water services throughout South Australia. Each device is registered on the system when it is installed, and a reminder letter is sent to the property owner each year to have the device retested to ensure the device is functioning correctly. Audits of backflow prevention devices are undertaken to ensure they are installed in accordance with the National Construction Code Volume Three and associated Standards.

Use of non-drinking water for irrigation purposes

The use of non-drinking water for irrigation of municipal parks and gardens, sports fields and school ovals has significantly increased over the last few years. The primary reason for the increased uptake of non-drinking water for such usage is sustainability and the efficient use of an alternative, cost-effective product. The availability and uptake of non-drinking water for irrigation has led to increased regulatory involvement of the Technical Regulator to ensure the ongoing safety in both plumbing and broad-scale irrigation systems.

The Technical Regulator has established technical sample monitoring to ensure that inter-connections between drinking and non-drinking water supplies are installed with appropriate backflow prevention devices. This requirement has been articulated through communication sessions with industry. Ongoing communication has focused on engaging directly with industry stakeholders to ensure compliance measures are adhered to.

15.7. Property Interest Reporting and Data Management

15.7.1. Property interest reporting

The Technical Regulator is required to disclose required information on the sale or change of ownership of a property under section 12 of the *Land and Business (Sale and Conveyancing) Act 1994*, regulation 16 of the *Land and Business (Sale and Conveyancing) Regulations 2010* and regulation 12 of the Regulations. The Technical Regulator provides interested persons with information relating to Encumbrances / Enforcement Notices registered against a particular property. These Notices are comprised mostly of Backflow Prevention Devices (which require annual testing and maintenance) and general non-compliant plumbing work.

The Technical Regulator receives daily correspondence from the Land Services Group (LSG) relating to the sale, potential sale or change of ownership of a property. The Technical Regulator is required to respond to the interested party within seven days.

15.7.2. Enforcement and Encumbrance Notices

The Technical Regulator places a notice on a property where plumbing audit results confirm a serious technical or safety issue associated with the on-site plumbing or where a backflow prevention device has been installed in connection with a drinking water service. Encumbrances held by the Technical Regulator relate to backflow prevention devices. The remaining enforcement notices relate to non-compliant plumbing and pipes crossing boundaries. These notices are registered on the South Australian Integrated Land Information System (SAILIS). A notice will remain on a property until the plumbing work is made compliant or the Backflow Prevention Device is no longer required.

15.7.3. Self-management of testable backflow prevention devices

The Technical Regulator has implemented a policy for the management of testable backflow prevention devices located on State Government and local Council properties. The policy allows the South Australian Government and local Councils to manage the testing and maintenance of their own backflow prevention devices.

Following consultation with several local Councils, the Technical Regulator saw an opportunity for customers to reduce administrative costs and produce a maintenance schedule suitable to their specific needs. Most Government departments and local Councils already maintain appropriate databases which made resubmitting details to the Technical Regulator repetitive and time consuming. The objective of the policy was to simplify administrative requirements for Government Agencies, local Councils and the Technical Regulator through a reduction of reporting requirements associated with testable backflow prevention devices maintenance. The Technical Regulator has approached relevant customers individually and worked collaboratively with them to promote self-management of their Backflow Prevention Device test records. Instead of sending all test records to the Technical Regulator at the time of testing, Government Agencies and local Councils will manage their own backflow devices. The Technical Regulator will conduct desktop and site audits at pre-determined intervals throughout the year to ensure compliance.

The response from customers has been overwhelmingly positive. One local Council wrote to the Technical Regulator stating that the ‘benefits for Council are quite

significant' and was appreciative of the Technical Regulator in recognising them as a suitable candidate for the introduction of the self-management project. One of the key requirements of implementing the Self-Management system is that the government department or local Council has no backflow devices that are delinquent or overdue for retest. The strong desire to self-manage is encouraging customers to keep all devices appropriately maintained. The Technical Regulator will continue to work with State and Local Government to explore more opportunities for the self-management of testable backflow prevention devices.

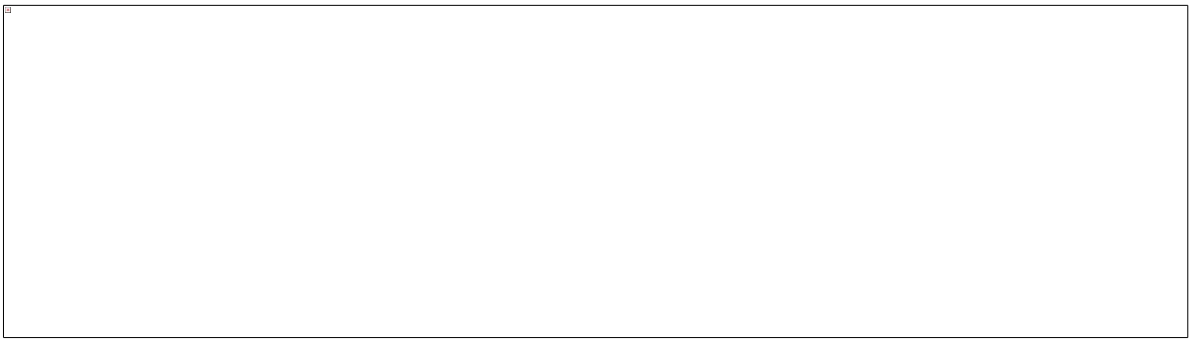


Figure W 18: Example of a section of a backflow management template

Section 16: Consumer Safety Awareness

16.1. Plumbing advisory notes

The Technical Regulator produces Plumbing Advisory Notes (PAN) to help people working in the plumbing industry interpret the requirements for on-site plumbing installations. Those notes are available on the DEM/OTR website and refer to specific issues such as hydraulic submission applications, general plumbing, equipment and installation requirements.

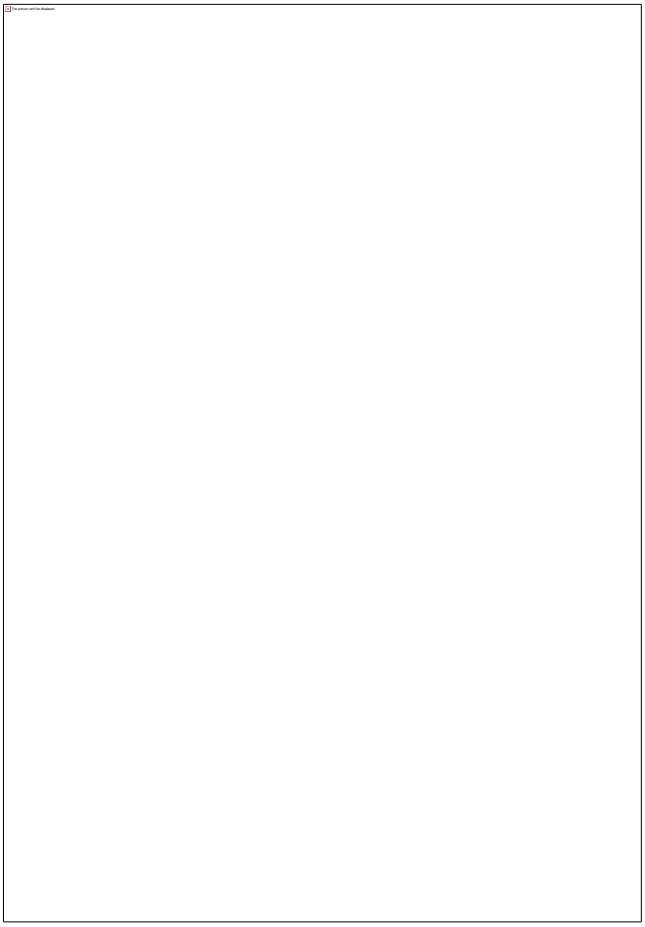


Figure W 19: Examples of Plumbing Advisory Notes

16.2. Training Sessions for Water and Plumbing Industries

Regular training, consultation and information sessions are conducted with the water and plumbing industries.

The Technical Regulator uses these training sessions as an opportunity to discuss and clarify changes to regulatory Standards and practices. Examples of training session topics include:

- Updates on changes to National Construction Code Volume 3 – Plumbing Code of Australia (PCA).
- Updates to the AS/NZS 3500 Plumbing and drainage Standard series which include Water Services, Sanitary Plumbing & Drainage, and Heated Water Services.
- Safety and technical requirements for Non-drinking Water in South Australia.

- Technical issues such as sanitary drainage, non-Drinking Water installations, Legionella Control, Fire Service installations, Backflow Prevention for irrigation systems, WaterMark compliance and Water Efficiency Labelling Compliance (WELS).

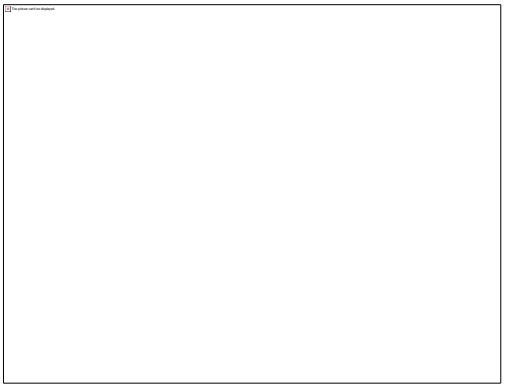


Figure W 20: Training session conducted by the OTR plumbing at Tonsley TAFE.

The Technical Regulator has strong relationships with the following groups and is regularly engaged to conduct or attend information sessions:

- Plumbing Industry Reference group (TAFE SA).
- Department for Health and Wellbeing.
- Hydraulic Consultants Association (HCAA).
- PlanSA.
- Peer Training Reference Group.
- SA Water.
- Backflow Prevention Association of Australia.
- Water Industry Technical Advisory Committee.
- Country Fire Service (CFS).
- Building Consultants Forum.
- Water Industry Alliance (WIA).
- Master Builders Association Technical Committee.
- Regional Local Government Groups.
- Master Plumbers Association of SA Inc.
- The Commission.
- Australian Building Codes Board.
- Local Government Association of SA.
- Backflow Prevention Association of Aust.
- Wastewater Special Industry Group (Environmental Health Officers).
- Australian Water Association (AWA).
- Metropolitan Fire Service (MFS).
- Fire Industry Association (FIA).

Master Plumbers Association of South Australia Inc. (MPA)

The Technical Regulator consults with the MPA on a regular basis and has utilised their forum to improve plumbing regulation including conducting presentations at their regional and local Roadshows. The Technical Regulator has also collaborated with the MPA to actively address regulatory issues, licensing matters, the electronic Certificate of Compliance project and continuing professional development. The Technical Regulator provides regular articles for the MPA's Plumbing SA newsletter and is represented on the MPA selection panel for the Plumbing Gold Medal Award which is presented annually to the Apprentice of the Year.

Hydraulic Consultants Association Australasia (HCAA) (South Australia)

The Technical Regulator actively engages with members of the HCAA and seeks their input into proposed amendments to the Plumbing Code of Australia and associated

Standards. Attendance at meetings provides the Technical Regulator with the opportunity to clarify issues as they are presented. The Technical Regulator has conducted presentations on non-drinking water and fire service installations.

Wastewater Special Industry Group (Environmental Health Officer)

The Wastewater Special Industry Group comprises predominately of Environmental Health Officers (EHO's) and SA Health Officers who monitor on-site wastewater treatment systems. The Technical Regulator provides updates on the National Construction Code Volume 3 and associated Standards. Presentations have been made on the electronic Certificate of Compliance project and the as-constructed drainage plan project. The Technical Regulator engages with EHO's in regional areas and provides training on regulatory and on-site plumbing requirements. Training has been provided for EHO's in the South-East Region, York Peninsula and Kangaroo Island.

The Plumbing Industry Reference Group (PIRG)

PIRG is an Industry Reference Group. PIRG members represent various sectors of the plumbing industry including the Technical Regulator, MPA, Plumbing Contractors, the Construction Industry Training Board, manufactures and apprentice providers.

The committee meets quarterly to discuss matters that affect the training of apprentices which includes discussion on the following topics:

E-Learning.	Reporting on the training package.
Licensing matters.	Quality and Industry Validation.
Training and information sessions conducted to staff and students by the Technical Regulator.	Training Gaps.
	WHS.
Continual professional development.	Business Development.

Building industry technical advisory committees

The Technical Regulator is involved with the Master Builders Association (MBA) and the Housing Industry Association (HIA) technical committees. The Technical Regulator provides information and advice to the MBA and HIA on plumbing regulation in South Australia.

SA Water Industry Regulators

The Technical Regulator has operational agreements and Memoranda of Understanding (MOUs) with key intra-government water regulatory agencies. These agreements and MOUs are intended to promote a streamlined regulatory process for the water industry by working with other government agencies to optimise each agency's regulatory input. Furthermore, the Technical Regulator has been fundamental in the development of an intra-government water regulatory consortium, where agencies are able to share key information about their current operations and any impacts of the water industry and/or other agencies. The water agencies involved in this consortium are:

- Office of the Technical Regulator.
- Department for Environment and Water.
- Essential Services Commission of South Australia (the Commission).
- Department for Health and Wellbeing.
  Environment Protection Authority (EPA).

Section 17: Water and Plumbing Regulatory Coordination

17.1. Technical Standards

The Technical Regulator has the power to publish Standards relating to infrastructure or equipment that is used, or is capable of being used, in the water industry under section 66 of the *Water Industry Act 2012*.

17.1.1. Water and Sewerage Infrastructure Technical Standards

The Technical Regulator has published the Infrastructure Standard which adopts the Water Services Association of Australia (WSAA) codes as the principle minimum Standard for water and sewerage infrastructure. The Infrastructure Standard is currently under review with the intent to identify any potential opportunities for improvement to ensure WIEs have clear requirements and frameworks and can achieve ongoing compliance.

Water Services Association of Australia (WSAA)

The Water Services Association of Australia (WSAA) has developed National Codes (WSAA Codes) for the urban water industry detailing performance requirements for design, installation, inspection, alteration, repair, maintenance, removal, disconnection or decommissioning of water and sewerage infrastructure. The WSAA Codes have been widely adopted by water utilities across Australia and the water industry. The WSAA Codes allow for water industry entities to make appropriate modifications (where necessary) to accommodate their needs and preference as well as local construction practices and products.

The Department for Health and Wellbeing (DHW), Local Government Association of South Australia (LGA) and Environment Protection Authority (EPA) also have technical Standards, codes and guidelines for the water industry, in particular related to the design and installation of CWMS.

The Technical Regulator has identified the WSAA Codes, and any technical Standard, code or guideline stated in legislation as suitable Standards for the South Australian water industry. These codes, Standards and guidelines are referenced during the review and approval of water industry entities' SRMTMPs, and for the provision of advice in relation to safety or technical matters to the water industry.

If an alternative Standard is proposed, it is necessary for the water industry entity to identify all potential risks and develop associated mitigation measures and approaches to reduce or eliminate the relevant risks. Following the receipt of this information, the Technical Regulator will then determine whether the alternative approach adequately meets the required performance outcome.

17.1.2. Plumbing Technical Standards

The Technical Regulator has published a Plumbing Standard under section 66 of the *Water Industry Act 2012* that provides the basis for calling up the relevant sections of the National Construction Code (NCC) Volume 3 – Plumbing Code of Australia (PCA) (see Appendix 4).

National Construction Code (NCC)

The NCC is an initiative of the then Council of Australian Governments (COAG), developed to incorporate all on-site construction requirements into a single code.

The NCC is model regulation developed by the Australian Building Codes Board (ABCB) and takes effect through legislation of the States and Territories which administer and enforce building and plumbing regulation.

Building regulation is covered in Volumes 1 and 2 – the Building Code of Australia (BCA). Volume 3 covers plumbing regulation – the Plumbing Code of Australia (PCA).

Australian Building Codes Board and Plumbing Code Committee

The Plumbing Code Committee (PCC) is the ABCB's peak plumbing technical advisory body. The PCC is a valuable national forum through which regulatory authorities and industry consider technical matters relevant to plumbing regulatory reform and plays an active role in assisting the Board in meeting its obligations under the Guidelines and the Inter-Government Agreement.

The PCC operates in alignment with the ABCB's Building Codes Committee (BCC) to ensure a coordinated approach to building and plumbing regulatory reform. The Technical Regulator regularly provides agenda items for discussion at PCC meetings. Issues including sanitary drainage, non-drinking water, fire service installations and water services have been presented to the committee with recommendations for amendments to the Plumbing Standards.

The NCC Series is drafted in a performance format allowing a choice of Deemed-to-Satisfy Solutions or the flexibility to develop Performance Solutions (refer to Figure W 21).

One of the essential elements for introducing a performance mind-set is to re-educate the plumbing industry on the methods of achieving compliance by analysing the Performance Requirements against the standard Deemed-to-Satisfy Solutions and the Performance Requirements in the PCA.

The ABCB is undertaking a project to quantify plumbing and drainage performance. The information gathered from this project will allow the ABCB to develop existing performance requirements set out in the PCA into simpler, more measurable expression. The resulting performance requirements will be included in the next PCA edition due to be published in late 2025.

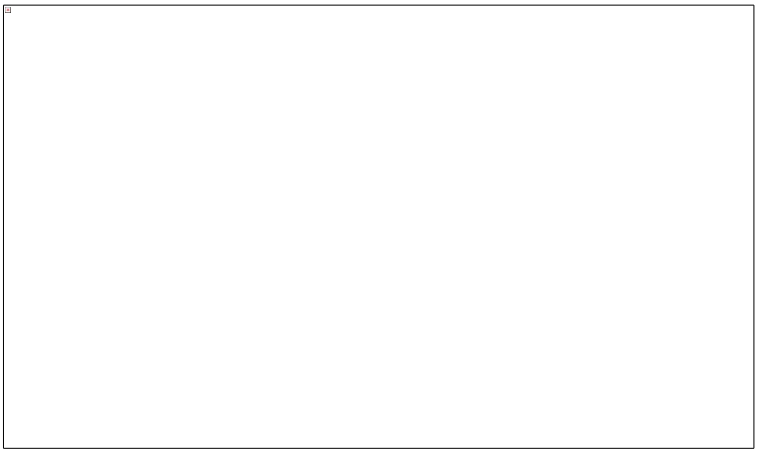


Figure W 21 : NCC Compliance Structure

WaterMark Certification Scheme

The WaterMark Certification Scheme is a mandatory certification scheme for plumbing and drainage products to ensure that plumbing and drainage materials and products are fit for purpose and appropriately authorised for use in plumbing installations. The WaterMark Scheme is administered by the ABCB; the PCC, as the primary plumbing technical advisory committee, is regularly engaged to comment on changes to the Scheme.

The ABCB released a new improved WaterMark Scheme on 1 July 2016. The new WaterMark Scheme Product Database has also been published on the ABCB's website. This database is based on a single material and product certification level (where previously there were 2 levels of certification).

The aim of the revised Scheme and database is to streamline requirements, processes and enforcement creating a reliable, consistent and level playing field for scheme participants and mitigating risks to the ABCB. This enables the scheme to deliver plumbing and drainage products that are safe and fit for their intended use in and around buildings in an environment that is increasingly challenged by reduced resources for enforcement, increased product non-conformity and an ever-expanding global market.

AS/NZS 3500 Plumbing and Drainage Standard

Standards Australia has recently updated the following sections of the AS/NZS 3500 Plumbing and drainage Standard:

Revision of AS/NZS 3500 series:

Part 1 Water services.	(version published 28th May 2021)
Part 2 Sanitary plumbing and drainage.	(version published 28th May 2021)
Part 4 Heated water services.	(version published 28th May 2021)
Part 5 Housing installations.	(Part 5 has been discontinued)

The AS/NZS 3500 Plumbing and Drainage Standard Series is prepared by Standards Australia to provide plumbers with Deemed-to-Satisfy Solutions to comply with the Performance Requirements of the PCA. The WS-014 Committee assists Standards Australia in the administration of the AS/NZS 3500 Series.

17.1.3. OTR Guidelines

Non-Drinking Water Guidelines

The Technical Regulator released non-drinking water guidelines titled Guidelines for Non-drinking Water in South Australia. . The guidelines were developed for the water and plumbing industries and are applicable to all non-drinking water installations in South Australia.

The guidelines are presented in three parts and outline requirements and responsibilities for installing, operating and maintaining non-drinking water systems in accordance with the *Water Industry Act 2012*, the Regulations, and appropriate technical Standards, and will be used by the plumbing and water industries, water industry entities and property owners with a non-drinking water supply.

In 2023-24 the Non-drinking Water Guidelines were updated to ensure they remain relevant to the current needs and practices within the water industry. Industry consultation was undertaken as part of the review and update of the Non-drinking Water Guidelines, with comments and feedback considered and incorporated, resulting in a comprehensive updated guideline. The updated Non-drinking Water Guidelines and a summary of changes are available on the DEM website.

17.2. Committee Representation

The Technical Regulator provides expert technical input for the revision of key Standards through representation of the following Standards committees:

ABCC	*Australian Building Codes Plumbing Codes Committee*
WS-014	*Plumbing and Drainage Standard – Part 1 – Water services*
WS-014	*Plumbing and Drainage Standard – Part 2 – Sanitary plumbing and drainage*
WS-014	*Plumbing and Drainage Standard – Part 4 – Heated water services*
WS-039	*Mirror Committee for ISO/TC 275 - Sludge recovery, recycling, treatment and disposal*
WS-041	*Mirror Committee for ISO/TC 224 – Service activities relating to drinking water supply systems and wastewater systems - Quality criteria of the service and performance indicators*

Appendix

Appendix 1: OTR Activity Report – 2024-2025

This is an activity report that describes the operations of the Technical Regulator in the Electrical, Gas, Plumbing and Water industries over the 2024-2025 financial year.

The Technical Regulator is a statutory office established by:

- Section 7 of the *Electricity Act 1996*. Robert Faunt has held this office since he was appointed as the Technical Regulator under the *Electricity Act 1996* on 28 February 2003.
- Section 7 of the *Gas Act 1997*. Robert Faunt has held this office since he was appointed as the Technical Regulator under the *Gas Act 1997* on 28 February 2003.
- Section 8 of the *Water Industry Act 2012*. Robert Faunt has held this office since he was appointed as the Technical Regulator in 2012.

Technical Regulator:	**Robert Faunt**
Address:	**Level 8, ANZ Building** **11 Waymouth Street** **Adelaide 5000**
Postal Address:	**GPO Box 618** **Adelaide SA 5001**
Telephone:	**(08) 8226 5500**
Office Hours:	**9 am to 5 pm, Monday to Friday** **(except public holidays)**
Website:	www.sa.gov.au/otr
Email:	DEMOTRMail@sa.gov.au
ISSN:	**1832-8687**

Note: All photographs in this report have been used with the permission of the relevant provider.

Overall Activities for 2024-2025

Section A1: Overall Activity

1.1. Electronic Certificate of Compliance (eCoC)

Certificates of compliance are an instrument used to demonstrate that an installation is compliant and can be used by a property owner to demonstrate that they have met their duty to ensure that their property is safe. The electronic certificate of compliance (eCoC) system was launched for registration only in August 2016 and for the creation and submission of eCoCs in January 2017. Following an 18-month transition; paper certificates were discontinued on 30 June 2018. Usage of eCoCs rose sharply after 30 June 2018, while new registrations peaked at 1200-1500 registrations per month in June and July 2018.

In recent years, new registrations have stabilised at around 1200-1400 electrical registrations per year, and between 300-400 registration per year for the plumbing and gas industries. The lower registration numbers for the 2022-23 financial year may be partly explained by a system error affecting the self-registration system between February-July of 2023, which required a manual process to complete registration. The automated self-registration system has since been resolved and registration statistics form 2023-24 show that the dip in registrations was at least partly attributable to the error. Licence registrations in the last financial year have returned to the normal level seen since the 2019-20 period as can be seen in Figure A1 1.

Figure A1 1: New Licences Registration over the last 5 years

eCoC submission rates have since increased year-on-year, exceeding the annual volume of paper certificates which were printed before the introduction of eCoC. When considering wastage associated with correcting paper certificates, this trend indicates increasing levels of compliance within industry. The Technical Regulator

now receives an average of up to 30,813 electrical eCoCs each month. Plumbing and Gas work generates fewer certificates, averaging around 2,974 and 2,155 eCoCs each month respectively over the last year. Monthly totals for Electrical, gas and plumbing eCoC for the last two years can be seen in Figure A1 2.

While rates of eCoC submission had continued to increase, the COVID-19 restrictions in place throughout 2020-22 indicate that levels of industry compliance and number of certified installations did endure a minimal impact due to the pandemic. Subsequently, Figure A1 2 shows that the number of eCoC submissions has since stabilised to more consistent rates (with obvious seasonal variability). The vast majority of eCoCs relate to electrical work as can be seen in the comparative axes of Figure A1 2.

Figure A1 2: Electronic Certificate of Compliance Submission Rates by Industry,

The eCoC platform is free of charge and is available on a range of devices, allowing tradespersons to complete the form on site using their smartphone, tablet or computer. The OTR continues to provide eCoC user support through the otr.ecoc@sa.gov.au inbox and a dedicated support phone number, staffed on business days, from 8:30-4:00 PM. Common issues, user registrations and advice on account set-up is provided through these services as well as providing valuable user feedback, system error reporting and suggestions for new features or tools on the eCoC platform.

Plumbbooking

Separate to generation of certificates of compliance, eCoC also offers a portal for plumbers to book certain types of plumbing installation work for OTR inspection.

Plumbers can book their work in for the next business day, when this is completed before 3pm. These bookings are then assessed by the OTR and a portion of these are allocated for inspection. Plumbers can on the morning of their booking identify whether their work has been allocated for inspection via the My Plumbbooking dashboard in eCoC, providing a useful interface between OTR and industry. In 2024-25 the OTR received over 27,900 bookings.

Automatic Mutual Recognition (AMR) of Interstate Licenses

AMR is a federal government led program intended to enable workers who need to be licensed or registered to take up new work opportunities across most of Australia. AMR allows workers to use their home state's current licensing in other jurisdictions without having to apply or pay for a new license in that state or territory. AMR commenced in South Australia on 1 February 2022 through Consumer and Business Services (CBS) register. Interstate plumbers, electricians and gas fitters using the AMR scheme to work in South Australia can contact the OTR after registration with CBS in order to have a user profile created in the eCoC system, allowing AMR participants to fulfill their worker and contractor obligation is South Australia and create and submit eCoC documentation for any work undertaken. To date, 247 interstate licenses have been registered for eCoC systems under AMR arrangements, with 99 of these AMR registrations taking place within 2024-25.

eCoC was upgraded in 2025 to include a new registration process for those utilising AMR. This replaced a manual process, providing a form where interstate licence holders can provide their details. These are reviewed by an OTR officer who can then approve access to eCoC.

1.2. Emergency Management

Significant Weather

Weatherwise, the 2024-2025 summer season saw South Australia experience above-average temperatures and it was also characterised by very dry conditions. The summer weather conditions extended well into April, with seasonal rains not commencing until late May 2025.

The most significant weather events in 2024-2025 also brought the most significant power systems events, consisting of:

- 17 October 2024 Far North Severe Storm and Power System Event; and
- 14 March 2025 Yorke Peninsula Power Outage Event.

There was a further weather event that impacted South Australia through floodwaters crossing the border and impacting South Australia:

- March 2025 – present Far-North Inland Flooding Event.

17 October 2024 Far North Severe Storm and Power System Event

Severe supercell thunderstorms in the Far North, Mid-North and Flinders Districts resulted in destructive winds in the afternoon and evening of Thursday 17 October 2024. The electricity transmission network in South Australia's north experienced extensive and catastrophic damage, with a total of ten transmission line outages throughout the severe weather event. This included damage to 33 transmission towers in total across the impacted areas, with 31 of the towers brought down. Storm damage then extended into New South Wales.

The Davenport – Olympic Dam West 275 kV transmission line had two towers downed and was restored on Friday 1 November 2024 (and the Davenport – Pimba via Mt Gunson 132 kV transmission line had four towers downed). This restoration enabled BHP to recommence production and for power to be supplied to Pimba (9 customers) and Woomera (approximately 115 customers) via backfeeding through the Roxby Downs to Pimba section of the 132 kV transmission line.

The Davenport – Leigh Creek 132 kV transmission line was most severely impacted. The townships of Hawker and surrounding areas with 355 customers and Leigh Creek and surrounding areas with 426 customers experienced an outage as they are supplied by this transmission line. SA Power Networks placed Hawker and Leigh Creek (and their surrounding areas) on temporary generation. The transmission line was restored on 14 February 2025.

Quorn and its surrounding areas with 909 customers experienced an outage through damage to the 33 kV distribution line that supplies the area which was returned to service on Friday 1 November 2024.

Officers from the Office of the Technical Regulator formed an incident management team. A Zone Emergency Support Team was also established to assist in managing

downstream consequences from the event. An Electricity Supply Emergency was declared by the Minister for Energy and Mining pursuant to the *Emergency Management Act 2004* from Tuesday 19 November 2024. It was extended by Her Excellency the Governor in Executive Council on 29 November 2024 so that it continued to be in force until the end of Tuesday 17 December 2024. The purpose of the declaration was to enable the restoration of the Davenport – Leigh Creek 132 kV transmission line.

14 March 2025 Yorke Peninsula Power Outage Event

At approximately 0530 hours Australian Central Daylight Saving Time on 14 March 2025, the Yorke Peninsula experienced a power outage. The transmission network service provider, ElectraNet, discovered multiple faults in the transmission network at the Hummocks substation, likely caused by insulator pollution (dust and salt build-up on insulators), which led to a substation trip. The outage lasted for about 17 hours. Approximately 20,000 customers were affected.

Officers from the Office of the Technical Regulator formed an incident management team. A Zone Emergency Support Team was also established to assist in managing downstream consequences from the event.

March 2025 – present Far-North Inland Flooding Event

In March 2025, heavy rainfall in southwest Queensland filled inland river catchments feeding the Cooper Creek and Diamantina River. Cooper Creek flows into South Australia and ends in Lake Eyre / Kati Thanda. As the floodwaters flowed along the Cooper Creek, they fanned out over a wide area, impacting operations at SANTOS' Moomba oil and gas fields and Beach Energy's oil and gas wells. The Birdsville Track is cut (and will be for months) as the floodwaters from Cooper Creek have now fully made their way to Lake Eyre / Kati Thanda.

Cooper Creek also flows through to the Strzelecki Creek, which branches off in a southerly direction just west of Innamincka. The Strzelecki Creek also flooded and filled Lake Blanche at its far southerly end. The Diamantina River supplies the Warburton River in South Australia and the floodwaters there have also ended up flowing into Lake Eyre / Kati Thanda.

Gas production at Moomba remains reduced as gas wells were shut in (made safe). Gas production was approximately 25 – 40 tera-joules per day lower than normal during the peak of the flood. Wells are slowly being brought back online as access is restored.

The floodwaters also impacted high pressure gas transmission pipelines. Segments of the Moomba to Adelaide gas transmission pipeline were exposed. Epic Energy has inspected and supported the exposed pipeline segments. Similarly, part of the Queensland to South Australia / New South Wales (QSN) Link pipeline was exposed and APA has inspected and supported the exposed pipeline segments. The flows on both pipelines are operating at normal volumes.

The SEAGas pipeline connecting South Australia with Victoria continues to operate normally. As such, there are no East Coast Gas System impacts.

Maintaining Situational Awareness

More broadly, the Office of the Technical Regulator maintains well-developed relationships with the Australian Energy Market Operator (AEMO), State and Territory Governments and the Australian Government, as well as other bodies such as the Bureau of Meteorology to help facilitate information flows and maintain situation awareness in relation to power and gas system issues.

The Office of the Technical Regulator monitors the National Electricity Market in real time, receives information from AEMO at least weekly in relation to supply and demand projections, and reports on the status of the power system weekly. The Office of the Technical Regulator also closely monitors developments in relation to weather, and generator availability in energy markets.

The Office of the Technical Regulator also monitors the natural gas and liquid fuel industries and prepares regular periodic reports on the state of these industries and supply levels.

Personnel from the Office of the Technical Regulator have participated in emergency management exercises over the last twelve months, including the annual exercise with respect to electricity and gas coordinated by AEMO.

There were no temporary gas rationing directions or emergency declarations made under the *Gas Act 1997* or the *Petroleum Products Regulation Act 1995*, respectively.

1.3. Consumer Safety Survey

For 2024-2025, the key outcomes and reporting from the Consumer Survey included, with 400 respondents:

- Across the sample, recall rose from 19% in 2024-2025 to 33%, seeing at least one form of OTR advertising.
- Online/internet (41%) and Facebook (42%) remained the most significant sources of advertising platforms over the last three years. Bus stops (22%), Instagram 23%) and Billboard (20%%) was another source of advertising that performed well.
- 78% of the survey respondents indicated they were aware of the dangers of Carbon Monoxide (CO) poisoning from malfunctioning gas appliances/installations in enclosed spaces, with notable increase compared to previous years. And 37% service their gas appliances at least every two years.
- Those who are not aware of the risks of Carbon Monoxide (CO) poisoning are far more likely to never service their gas appliances 34%) and gas barbeques (33%) compared to those within the sample who are aware of the dangers of poisoning from gas appliances (32%) and gas barbeques (25%).
- Amongst those who had work done on their property in the last 12 months: 86% were aware that the law requires a plumber to hold an appropriate license. 89% were aware that the law requires an electrician to have an appropriate license, and 88% were aware that the law requires a gas fitter to hold an appropriate license. increasing across all three industries.
- Generally, recall of all safety messaging has increased from 2024.
- Respondents generally indicate a high level of awareness regarding the proper usage and disposal of Li-Ion battery. 81% Strictly follow manufacturer instructions for Li-ion battery products, increasing from previous year.
- 51% test their electricity safety switch, and 32% services their solar electricity system, increasing significantly compared to 2024 (13%).
- 45% of the respondents have had their electrical wiring inspected by licensed electrician and of those, majority (72%) recall receiving a report or an electronic certificate (eCoC). 23% of those who has not had an inspection considered doing so.
- Provision of Certificates of Compliance for plumbing work (59%) similar to last year. Provision of Certificates of Compliance for electrical work (71%) slightly lower than last year. Provision of Certificates of Compliance for gas work (69%) also slightly lower than last year.
- Awareness of the law requiring electricians to hold appropriate licensing (89%) and provide customers with a Certificate of Compliance upon completion (72%) has increased slightly.
- Awareness of law that requires plumbers to hold appropriate licensing (86%), provide a Certificate of compliance upon completion (65%) and

diagram showing any new sanitary drain location (46%) has increased slightly.

- Awareness of law that requires gas fitters to hold appropriate licensing (88%) and provide customers with a Certificate of Compliance upon completion (72%) has increased slightly.
- Engagement with tradesperson to undertake maintenance/repair in the past 12 months has significantly decreased by 7% each for plumbing (30%) and electrical (27%), and down by 2% for gas (16%).
- Awareness of product safety certification schemes rose sharply to 53%, which is the highest level recorded since tracking began. This year tracking reversed the slight dip observed in 2024, marking a significant 17 percentage point increase from 2024..
- Online purchases showed a significant recovery in 2025, with 70% of respondents reporting they received a safety or plumbing certification, double the 35% recorded in 2024. whereas the ‘unsure’ responses dropped to 15%..
- The most common sources of advice on gas, water, plumbing, and electrical safety were tradespersons (55%) and the internet (52%), followed by SA.gov.au (39%) and friends/family (31%). Office of the Technical Regulator would be considered as an information source for 17% of the sample increasing from the previous year.

It is worth noting that new safety campaign designs were used for 2024-2025. The Technical Regulator has considered this feedback and incorporate them into future campaigns

Volume I – Electrical Industry

Section A2: Electrical Infrastructure

2.1. Audits by the Technical Regulator

2.1.1. SRMTMP Generator Field Audits

In 2024-2025 the Mannum Stage 2 solar farm, North Brown Hill wind farm, City of Adelaide solar, Hallett gas turbine power station, and Snapper Point power station were audited against compliance with their SRMTMP.

The areas audited variously included:

- Training systems.
- Safe Work Systems.
- Contractor management.
- Isolation practices.
- High voltage switching.
- As built drawing management.
- Accident investigation and reporting.
- Maintenance management systems.

Overall, no evidence was found that would indicate that the entities do not generally comply with the processes listed in their respective SRMTMPs. In each case, the OTR provided advice and recommendations to the entity on opportunities for improvement to their processes.

2.1.2. Mannum Solar Farm Stage 2

Epic Energy South Australia Pty Ltd (Epic) owns and operates the Mannum Solar Farm Stage 2, located 3km west of the township of Mannum. The solar farm has a nameplate capacity of 37.807 megavolt amperes (MVA) and a maximum export limit of 29.99 megawatts (MW).

OTR officers conducted a field audit of Mannum Solar Farm Stage 2 on 24 June 2025. Outcomes from the audit are ongoing.

2.1.3. North Brown Hill Wind Farm

A field audit of the North Brown Hill wind farm was conducted on 1 May 2025. The 132.3 MW wind farm is owned and operated by AGL and is located west of the township of Jamestown. Outcomes from the audit are ongoing.

2.1.4. Hallett Power Station

Energy Australia owns and operates the Hallett Power Station. It is located 21km north-west of Hallett, where a 275kV electricity transmission line crosses the Moomba natural gas pipeline.

OTR officers conducted a field audit on 30 April 2025.

2.1.5. City of Adelaide Solar

The City of Adelaide operates a solar photovoltaic generator consisting of 260.64kW of solar panels mounted on the Topham Mall car park roof. An OTR officer from the installations team assisted infrastructure team officers in a site audit on 18 March 2025.

OTR officers recommended opportunities for improvement related to signage and fixings.

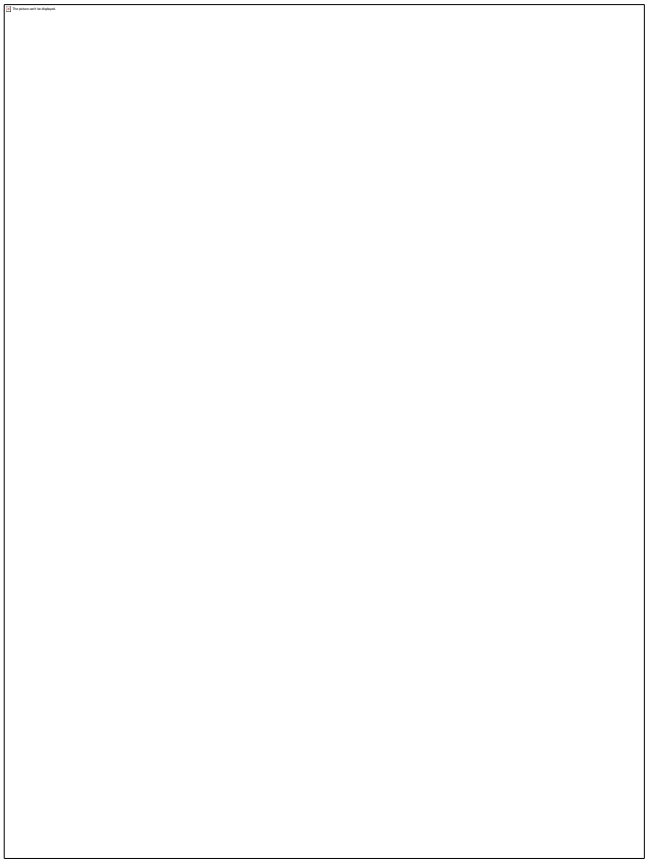


Figure A1 E 1: City of Adelaide CBD rooftop solar

2.1.6. Snapper Point power station

Port Adelaide Energy Pty Ltd (owned by Ratch Australia) operate the 150MW of gas turbines at Snapper Point Power Station, contracting the operations and maintenance to Worley. On 5 May 2025, OTR officers conducted a field audit at the Pelican Point Road site. Assets and documentation reviewed showed robust safety and technical management systems were in place.

2.1.7. SA Power Networks SRMTMP Audit

OTR officers conducted a SRMTMP audit on 12 November 2024 to review compliance with prescribed fire reporting and incident investigations. SA Power Networks now reports prescribed fires to OTR twice monthly.

2.1.8. Other SRMTMP investigations

In addition to audits of compliance against an entity's SRMTMP, during the bushfire season OTR staff assist in the State's emergency management response as Control Agency for energy (or as a Support Agency where there is another Control Agency), and subsequently investigates bushfires where electrical infrastructure may have been involved in starting a major fire, including site visits, data analysis and compliance auditing.

2.2. Generation

The *Planning, Development and Infrastructure (General) Regulations 2017* and the *Hydrogen and Renewable Energy Regulations 2024* require all new proposed generator plants of greater capacity than 5 MW to seek approval from the Technical Regulator to ensure it meets certain technical requirements to contribute to power system security in South Australia.

Since 1 July 2017, the Technical Regulator has technical requirements that proposed generators must achieve to receive a certificate from the Technical Regulator and progress to the Development Application stage.

The Technical Regulator has worked closely with the industry since these requirements have been put in place and continues to receive numerous generator applications throughout the year. The proposed projects cover a wide range of technologies and complexities. In 2024-2025, the Technical Regulator issued or reissued 22 certificates to proposed generators. The substantial decrease from 41 over the previous 12 months was due to the previous influx in applications for grid-scale batteries related to the 23 October 2023 invitation for expressions of interest for Crown Sponsorship from the Minister for Energy and Mining for streamlined planning approval.

2.3. Transmission

2.3.1. Transmission Line Availability

The electricity transmission system transports power from the power stations directly to a series of sub-stations and switchyards, which in turn supply the distribution system and directly connected transmission customers. The major transmission entity in the State, ElectraNet, owns and operates a network of approximately 6,650 circuit kilometres of transmission lines. The network operates at nominal voltages of primarily 275 kV and 132 kV with a smaller number of 66 kV lines. The transmission system also includes around 99 substations and switchyards. Transmission line availability in 2024-2025 was 99.21%, up from 98.02% in 2023-2024. ElectraNet's Key Performance Indicators (KPIs) from its SRMTMP are listed in Table K1 in Volume IV.

2.4. Distribution

The distribution network delivers power to consumers. The major distribution network operator, SA Power Networks (SAPN), formerly known as ETSA Utilities, owns and maintains over 90,860 kilometres of overhead and underground distribution lines.

The lines operate at 132 kV, 66 kV, 33 kV, 19 kV (SWER), 11 kV, 7.6 kV and low voltage (400/230 V). The network includes around 400 substations and switchyards.

The South Australian distribution network serves approximately 917,200 customers.

In 2024-2025 there were 10 switching incidents reported. Switching incidents include incidents that caused injury or potentially could have caused injury, resulted in unintended loss of supply, or caused damage or potentially could have caused damaged to infrastructure. This continues the downward trend. SA Power Networks' KPIs are provided in Table K2 in Volume IV.

2.4.1. Reliability

The reliability indicator "normalised Unplanned System Average Interruption Duration Index" ($USAIDI_n$) for the SA Power Networks' distribution system in 2024-2025 was an average of 143.0 minutes per customer. This has slightly increased from 142.1 minutes per customer reported in the previous year and achieves the service standard implied target of 150 minutes.

The Bureau of Meteorology (BOM) advised of numerous severe weather events in 2024-2025 of which many were categorised as Significant Weather Events (SWE). There were five days classified under the more severe category of Major Event Days (MEDs). Such events pose a major challenge for the reliability and management of the electricity distribution network. These five events contributed 31.1 minutes to USAIDI and are removed from the calculation of normalised USAIDI.

The Technical Regulator is continuing to monitor SAPN's performance across all areas.

Figure A1 E 2: State-wide Unplanned SAIDI for SA (minutes per customer)

SA Power Networks has excluded the major impact of significant weather events by excluding Major Event Day (MED) performance from the normalised performance. The MED is determined in accordance with the Australian Energy Regulator's (AER) Service Target Performance Incentive Scheme Guideline which mirrors the IEEE (The Institute of Electrical and Electronics Engineers) Standard 1366.

Includes unplanned interruptions on the high voltage and low voltage distribution network.

The State-wide transmission outage (i.e., Black-start event) occurred on 28 September 2016 and is excluded from the above figures as it was related to a transmission outage.

SA Power Networks also provides quarterly reports to the Technical Regulator which details all major outages in the previous quarter.

2.4.2. Outage Causes

The two major causes of unplanned interruptions across the State during the 2024-2025 regulatory period continued to be weather and equipment failure. Using the performance measure of $USAIDI_n$, these two causes accounted for 26% and 21% respectively of the interruptions in 2024-2025. Performance in March was adversely affected by insulator pollution due to the prolonged dry period without washing rains and by the severe storms on 11 March 2025. Grey-headed flying foxes continue to cause interruptions, but under half as many major interruptions this year compared to last.

The outage causes were generally relatively consistent with the previous years, as causes fall within the normally expected range. The Technical Regulator will also continue to monitor equipment failure reports.

Figure A1 E 3: Contribution to State-wide SAIDI for SA (minutes per customer)

2.5. Safety Clearances to Powerlines

2.5.1. Vegetation Clearance

Vegetation clearance regulation Review

Planting Lists and Bushfire Risk Areas

The *Electricity (Principles of Vegetation Clearance) Regulations 2021* require the bushfire risk areas and the lists of trees approved for planting near powerlines to be published on a website determined by the Technical Regulator. The maps are published on the South Australian Resources Information Gateway at map.sarig.sa.gov.au, and the trees lists on sa.gov.au. There were unsuccessful applications for one species to be added to the permitted tree lists in 2024-2025.

Risks associated with Vegetation near Powerlines

Falling vegetation continues to be a major factor in electricity outages. Damaged powerlines are a risk that can lead to sparking, and fires along with a risk of electric shock. In recent times, damage to electricity infrastructure due to falling trees and other vegetation – at times from outside the prescribed clearance zone – has led to major bushfires.

These incidents highlight the risks associated with vegetation near powerlines and the continued need for an effective vegetation management scheme.

Vegetation Clearance Objections

During 2024-2025, the Technical Regulator assisted with four objections regarding vegetation clearance issues. In most cases, a mutually acceptable outcome was achieved.

Several of these cases were more challenging cases, involving the hard wood of trees on private land being found to be within the safety clearance zone in bushfire risk areas. The management of these cases necessitated the removal of trees by the owner or by SA Power Networks.

Exemption to Planting Restrictions

The Technical Regulator publishes lists of species of vegetation that may be planted under or in proximity to powerlines, under the *Electricity (Principles of Vegetation Clearance) Regulations 2021*. The selected species are not expected to exceed a certain height or encroach into the buffer or clearance zone.

In some instances, the Technical Regulator may allow non-listed vegetation to be planted in proximity to powerlines. This is done through a conditional exemption from planting restrictions. The conditions generally specify the minimum safety clearance between vegetation and powerlines and put an obligation on the exemption recipient to maintain these clearances at all times. In 2024-2025 three applications were granted; two of the were for trees in proximity to transmission lines.

2.5.2. Building and Working Clearances

Building Clearance Approvals

The Technical Regulator is responsible for granting approvals under section 86 of the *Electricity Act 1996* for the erection of buildings in proximity to powerlines.

Any requests for approval to build within the prescribed safety clearance area are assessed individually, by means of a risk assessment which takes into consideration the safety of building construction and maintenance as well as the finished building. Eleven such approvals were granted in 2024-2025.

Equipment contacting overhead powerlines

Twelve incidents involving contact of equipment with powerlines were reported to the Technical Regulator in 2024-2025. In each case, the OTR reviews reports to ensure that the cause of the contact has been correctly identified, and that measures have been put in place to mitigate the risk of future incidents.

Section A3: Electrical Installations

3.1. Audits

In 2024-2025, the Technical Regulator audited 2077 (this included 1138 desktop solar audits for a solar installer) electrical installations for compliance with the Electricity Act 1996 and associated regulations. The number of audits conducted in the last 12 months have been impeded, in comparison to historical audits, due to staff on leave and sickness and staff shortage, the complexity of detail needed on audits and the additional demand on phone consultation. These restrictions have also affected intrastate auditing while delivering safety presentations. Many of the audited installations are randomly selected from eCoC system and complaints from the public or contractors, lists of new connections supplied by the distribution network service provider, SA Power Networks (SAPN) and other network operators. Additional electrical installation audits were conducted due to an increase in repeat non-compliance and for the preparation to Consumer Business Services (CBS) for disciplinary action.

The Technical Regulator assisted South Australian Police (SAPOL) at a total of 111 occasions. This includes attending 101 growers' premises having the cultivation of illegal cannabis where dangerous wiring, including meter bypasses, are suspected and the investigation of fatality sites with SafeWork SA. SAPOL related audits were lower due to other commitments by SAPOL. Power gets disconnected by the OTR for installations deemed immediately dangerous until they were rectified by a licensed electrician/contractor.

The Renewable Energy team conducted a total of 1219, including 1187 solar installations audits (including Solar Inverter settings), 21 home battery related audits, and additionally 11 electric vehicle charging stations. A new sector of auditing had been added to the renewable energy section, managing the inverter export settings. Due to staffing and the high compliance level of inverter export settings being achieved, this area of auditing has reduced.

3.2. Enforcement

In 2024-2025, the Technical Regulator issued 24 expiation notices, slightly lower than last year. A total of 14 homeowners were issued with an expiation notice for not maintaining their electrical installation to an acceptable safe level (majority due to cannabis crop cultivation)

Contractors and workers were issued a total of 10 expiations due to non-compliance or the repeat of non-compliance. Technical Regulator had referred 6 contractor/workers to CBS for licensing disciplinary action and retraining in the Wiring Rules.

3.3. Safety Awareness and Education

The Technical Regulator received 24,117 phone enquiries for interpretations or technical advice in relation to various electrical installation standards, from industry stakeholders, government departments, contractors / workers, and members of the

public. Most of these calls were of a highly technical nature due to new increasing electrical industry innovation, ongoing modifications to multiple Australian standards and the complex nature of work being performed.

Attended industry events to discuss safety and compliance issues with electrical contractors. A total of 128 presentations were delivered, covering legislation requirements, AS/NZS 3000 Wiring Rules (including multiple other related standards), the updates and issues to the electronic Certificates of Compliance system, changes to solar photovoltaic (PV) installation standard including associated standards, reports on major and minor incidents. Safety and technical presentations were also delivered to first- and third-year apprentices, industry groups, public events, government departments such as SAPOL and the Metropolitan Fire Department (MFS) / Country Fire Service (CFS) across the state.

Regulation Roundup editions 54 and 55 were published and distributed to electrical workers / contractors. All past and present editions are accessible on the OTR website. The two editions covered technical information relating to specific sections of the Wiring Rules, including other electrical related standards, information on solar PV, battery installations and safe working practices, amendments to the SA Power Networks Service and Installation Rules and frequently asked questions and the enforcement actions taken. The feedback received from the industry demonstrates that Regulation Roundup has become a highly valued source of vital information to the electrical industry and stakeholders.

The Technical Regulator has retained a prominent profile in the electrical industry with a continued demand for a presence at industry functions. At these events, the OTR is available to provide valuable information to electrical workers and contractors. We discuss a vast variety of electrical safety, common installation, and compliance issues in detail.

The awareness promoted to the electrical installations industry in South Australia, at the annual National Electrical and Communications Association (NECA) Roadshows and Master Electricians Australia (MEA) presentation nights, includes changes to various Australian standards, common installation complaints and an update on activity within the electrical and renewable energy industry.

The Technical Regulator has conducted additional presentations to SAPOL, CFS and the MFS. The presentations are focused on electrical hazards (including meter bypasses, dangerous wiring and booby traps) encountered on sites and increasing the awareness of alternative power supplies including solar and battery installations which are becoming more complex as industry innovation continues to develop.

The Technical Regulator’s safety presentations to the industry continue to have a vital role in maintaining a good safety record within the industry and improving relations with electricians and stakeholders. These safety and technical presentations to industry apprentices, industry groups and other government departments are undertaken on a regular basis each year.

The Technical Regulator has been present at the Master Builders Association (MBA), the Sunday Mail home building expos, Trade Tool expos and the two Caravan and Camping Shows throughout the year. Such events create an ideal opportunity to further promote electrical safety to the homeowner and tradespersons and answer technical queries from the public in a comfortable and friendly environment while also increasing public awareness and relations.

3.4. Incidents

In 2024-2025, there were zero electrical fatalities. There were 6 major electrical incidents, 4 being non-electrical related fatalities and 2 flashover/ developing explosions and sparks.

There were 24 minor electrical incidents, excluding contact with powerlines but includes 2 fires from hydroponic set ups and 4 from arc/flashes, 0 solar related fire. There were 350 prescribed fires reported from MFS for the period 1.1.2024 - 31.03.2025 only. This includes 34 solar fires, 2 solar battery fires and 66 non-solar battery fires (this includes transportation vehicles ie: scooters/bikes) and 26 flash/arc fires.

The Technical Regulator received a total of 1513 electric shock reports over the last 12-month period.

These shock reports include incidents with electrical installations, owner/occupier error and the electrical infrastructure, which accounted for over 84% of events reported, see Figure A1 E6.

Figure A1 E 4:Shock Report for 2024-2025 by Recipient Category

The 1,681 electric shock reports are further broken down into translated Cause category on Figure A1 E7

Figure A1 E 5:Shock Report for 2024-2025 by Translated Cause Category

3.5. Electronic Certificate of Compliance (eCoC)

The total numbers of electrical eCoC submitted over the last 2 years is demonstrated on figure A1 E8. On average approximately 30,813 electrical eCoCs get submitted each month.

Figure A1 E 6: Numbers of electrical eCoC over the past 2 years

Section A4: Electrical Products

The OTR monitors suppliers of electrical appliances and accessories for compliance with the *Energy Products (Safety and Efficiency) Act 2000*. A certification service assists the industry to meet compliance obligations. The OTR had a total of 79 applications for product approval, there were 14 product related investigation, and 1 voluntary recalls submitted to the ACCC following negotiations with the suppliers.

Section A5: Electrical Safety Awareness

To help maintain a good safety record within the industry and to promote public awareness, the Technical Regulator has:

- Ensured OTR engineers frequently made site visits to share information about working safely near powerlines with building industry companies and local councils and provided advice on safety and regulatory compliance of buildings and structures.
- Continued the “Be Energy Safe” campaign, with advertisements in print and other media to support specific campaigns, warnings and recalls.
- Provided safety brochures on request to local Councils, electricity entities and the public.

Volume II – Gas Industry

Section A6: Gas Infrastructure

6.1. *Utilisation of Natural Gas in South Australia*

Natural gas is delivered to South Australia from Moomba (SA) and Queensland via the Moomba to Adelaide Pipeline and from Victoria via the Port Campbell to Adelaide Pipeline. About 50% of gas delivered to SA was used in generating electricity in 2024-2025, in line with previous years. Figure A1 G1 demonstrates the amount of gas being used to generate electricity and for networks in South Australia over the past two years.

Figure A1 G 1 : Total gas usage for power generation and Networks

In South Australia, natural gas is supplied from several sources and is transported to its destinations from the various transmission pipelines as indicated in Figure A1 G2. In 2024-2025, as indicated on Figure A1 G2, the majority of gas was delivered from Queensland (QLD). Over the past three-year Queensland has continuously supplied higher portion of gas, see figure A1 G3.

Figure A1 G 2: Portion of natural gas delivered to the SA in 2024-2025

Figure A1 G 3: Natural gas delivered to the SA over the past 5 years.

Figure A1 G4 demonstrates the quantity of gas entering Australian Gas Networks' (AGNs) South Australian distribution network from each source, including Farm Taps.

Figure A1 G 4: Annual quantity of gas entering AGN's SA networks

It can be seen from Figure A1 G5 that the total amount of gas supplied to the networks in 2024-2025 has decreased from previous years. Despite the slight increase in 2018-2019 (1.2%) and 2021-2022 (0.1%), there has been a steady decline, while the total number of consumers increased by 6,325 customers in 2024-2025, see Figure A1 G6.

Figure A1 G 5: Trend in the quantity of gas entering the distribution system

The number of consumers connected to natural gas has been steadily growing over the years as demonstrated in Figure A1 G6. AGN's Annual performance indicator Report can be found on Volume IV Table K3.

Figure A1 G 6: Numbers of consumers in the natural gas distribution networks.

6.2. Gas Infrastructure

6.2.1. Natural Gas networks

In July 2019, Enwave Tonsley Pty Ltd commenced gas supply to the embedded natural gas distribution network at the new residential site at the Tonsley Innovation District. In September 2020 Enwave Tonsley Pty Ltd became CleanPeak Energy Tonsley Pty Ltd ('CPE') and the CPE gas distribution licence was issued by the Essential Services Commission of South Australia ('the Commission') which reflects this change of name. As a result of the change, the Technical Regulator reviewed and approved the appropriate changes which CPE has incorporated into their Safety, Reliability, Maintenance and Technical Management Plan.

The embedded network is a reticulated natural gas network with a capacity to supply approximately 805 residential customers. Gas is supplied to the embedded network from the Australian Gas Networks (AGN) natural gas distribution system via a nonpressure regulated metered supply point. As of 30 June 2025, there was in increase to 387 customers connected to gas supply at the site. In 2024-2025, the network has been operated in conformance with the Safety, Reliability, Maintenance and Technical Management Plan approved by the Technical Regulator. CPE expects to expand their network with an estimated additional 55 customers in 2025-2026.

6.2.2. Hydrogen Park SA (HyP SA)

In 2022-2023, AGN provided regular updates to the Technical Regulator on the operations of their 5% hydrogen blended renewable gas facility (HyP SA) at the Tonsley Innovation District. The initial blending network covered approximately 720 connections.

In 2023, the Technical Regulator approved AGN's proposal to expand the blended network increasing the customer numbers to 3,832 covering West and North of Mitchell Park. The expansion went live in March 2023.

In September 2023 AGN provided an updated Formal Safety Assessment (FSA) to include a 10% Hydrogen blend, no increased risks were identified. In March 2024 the Technical regulator approved AGN's proposal to increase the hydrogen blend to 10%.

In April 2025 AGN provided an updated Formal Safety Assessment (FSA) to include a 15% Hydrogen blend and requested the approval of the Technical Regulator. Conditional approval has been granted with ongoing inspections and assurance underway. Customer numbers continue to increase year on year to 3,924 by the end of the 2024-2025 period.

6.3. Safety of Natural Gas Infrastructure

In September 2024, AGN provided their Distribution Mains and Service Integrity Plan rev0 (DMSIP) and in October 2024 the South Australia Networks Asset Management Plan rev0 (NAMP) and Gas Meter Management Plan (GMMP) were received and reviewed by the Technical Regulator. There were no significant safety issues across 2024-25 and overall the Technical Regulator was pleased with AGN's performance.

The Technical Regulator noted that there had been a large increase in the numbers of overdue gas meters, in 2024-2025, both 15year and 10year meter life (Figure A1 G7) and this is on top of a large increase the previous year. The Technical Regulator was advised that the spike in number has been attributed to employee attrition and resource shortages encountered by contractors. Plans are now in place and a significant improvement is expected over the coming months

Figure A1 G 7: Overdue gas meters since 2018

6.3.1. Safety Reliability Maintenance and Technical Management Plan (SRMTMP)

In November 2024, AGN submitted a revised Safety Reliability Maintenance and Technical Management Plan (SRMTMP). Discussions between the Technical Regulator and the stakeholders ensured that the SRMTMP met all the requirements of the legislation and the distribution licence, thereby safeguarding the interests of the community. The Technical Regulator approved the SRMTMP.

The Technical Regulator noted that the key performance indicators (KPIs) provided by AGN (see Table K3 in Volume IV) indicate their distribution systems are generally in a sound condition and are being competently operated. With the Mains replacement program (MRP) coming to an end there are good indications that leaks across the networks continue to reduce.

In November 2024, the Technical Regulator approved the CleanPeak Energy Tonsley Pty Ltd SRMTMP. This document relates to the design, construction, commissioning, management, operation, maintenance and decommissioning of the embedded natural gas distribution network located at the Tonsley Innovation Centre. The SRMTMP has been prepared to describe how CleanPeak Energy's operations and maintenance staff ensure safe, reliable and sustainable management of the network

6.3.2. Auditing for safety and technical compliance

During 2024-2025, the Technical Regulator carried out a series of desktop and field audits against AGN's SRMTMP. This included a review of; the Gas Meter Management Plan (GMMP), Third Party interferences and incidents, Construction, commissioning and decommissioning, Formal Safety Assessment Process (FSA) and the Management of the Regional Distribution Network – Mount Gambier. Further field audits were conducted to review; Connection to an Industrial or Commercial premise and Main Replacement Program (MRP). The audits were carried out in areas that directly affect consumers, the public in general, and/or the safety, reliability, maintenance and integrity of the distribution network.

These audits included a review of the following:

- Evidence of completion of outstanding corrective actions on all recommendations noted during the Technical Regulator's audit August 2024 and any Australian Gas Networks' (AGN's) and APA's external audits in 2023 -2024.
- Systems and procedures to fulfil APA's obligations with respect to installations, operations, maintenance and emergency preparedness of the regional gas distribution network in Mt Gambier. Carried out discussions with the local field supervisor and contractor responsible for management of the gas distribution network (Section 4.5 of SRMTMP).

- I&C new connection – Field processes/practices to review how APA's contractors undertake the installation of a new industrial/commercial connection in line with APA policies and procedures.
- MRP – Field processes/practices to review how APA's contractors undertake main replacement.
- Regular reporting of outcomes from the APA Frontline Assurance Program – Quarterly reports highlighting non-compliance detected via the framework (compared total inspections) and what corrective action were undertaken.

The OTR audits found that the implementation of AGN's SRMTMP and GMMP (in the audited areas) met the minimum requirements prescribed by the Gas Act 1997, the Gas Regulations 2012, AGN's Distribution Licence conditions, safety and technical standards, and industry codes.

APA staff provided documents on behalf of AGN, which assured the auditors that APA have sound and well-developed systems in place to ensure that the risks to the South Australian community from the operation of the distribution networks are managed to an acceptable level.

APA presented limited evidence that the systems they have in place are adequate to ensure the training and assessment and the competency of the APA staff in the areas audited. While there are training requirements in place, those may not be met 100% of the time and the FLA process is being used to determine role competency in the field to ensure competency of personnel. There are concerns around the limited training records available for APA's contractors.

6.3.3. Gas incidents

There were 25 major outages in 2024-2025 (that is outages that affected more than five consumers) but no deaths or personal injuries were reported as a result of incidents in the distribution system. The Technical Regulator noted that the number of major outages was down on last year and back in line with previous years, however the number of customers affected was greatly increased.

6.3.4. Gas leak reports

APA Group provides the Technical Regulator with distribution system operational data on an annual basis. This data includes third party damage, gas leak public reports Figure A1 G8 and Unaccounted for Gas (UAFG) values Figure A1 G9. Figure A1 G8 and Figure A1 G9 provides the trend in these parameters for the last 8 years.

During 2024-2025, APA Group provided 119,807 location services to various third parties via BYDA, higher than 2023-2024 (108,629). This indicates that the South Australian public is aware of using the BYDA service to minimise the risks of gas incidents.

Public reports of gas leaks have reduced over the past year, with 923 recorded for 2024-2025 (Figure A1 G8) which can be divided between:

- 923 publicly reported gas mains and services leaks. (continuing downward trend)
- 483 public reports of third-party damage. (in line with previous years)

Figure A1 G 8: Numbers of public reports leak and Leakage survey

The Technical Regulator noted that the reported UAFG value was 73TJ, based on AGNs data (as of 30 June 2025). This has greatly reduced over the last 8 years (Figure A1 G9). This value represents less than 0.3% of the total quantity of gas that entered the distribution system (including Farm Taps). The great reduction of UAFG seems to be mainly attributed to the amount of cast iron and unprotected steel mains replacement which AGN carried out over the last 10 years. This significant decreasing trend in UAFG to 73 TJ is a pleasing outcome indicating improvement in the integrity of the AGN distribution networks, reliability of gas supply and the significant reduction of methane emissions into the atmosphere.

It is also noted that the number of third-party damages to gas infrastructure has reduced slightly in 2024-2025 after spiking last year. This is despite an increase in requests for location services (BYDA) and greater awareness on how to identify gas infrastructure before digging.

Figure A1 G 9: Numbers of UAFG lost from system as a result of leakage

6.3.5. AGN mains replacement program

Following a review of the AGN mains replacement program (as AGN reported to the Technical Regulator in 2024-2025), the Technical Regulator noted that AGN has replaced 144.7 km of old cast iron, unprotected steel and HDPE gas mains. The overall progress of mains replacement was 2.7 km above the AGN annual target of 142 km.

AGN advised the Technical Regulator that it has budgeted to replace further gas mains in 2025-26. The Technical Regulator noted that, in addition to low pressure cast iron and unprotected steel mains replacement, AGN will continue work in 2025-26 on the replacement of HDPE mains prioritised as locations of greatest risk in conjunction with an internal camera pipe inspection and repair program of HDPE DN50 and now DN40 mains.

Generally, the Technical Regulator supports most of the technical/field activities which AGN proposed to carry out on the gas distribution networks in South Australia to ensure safety and reliability of the networks over the five years of the AGN Access Arrangement. The AGN mains replacement program during the 2021-2026 Access Arrangement period was the major issue for the Technical Regulator's consideration.

6.4. Safety of LPG Distribution Networks

The Technical Regulator was advised by ELS that they expect their existing developments to continue to expand within the immediate Mount Barker area and they have no current plans to expand in areas outside of the Mount Barker township.

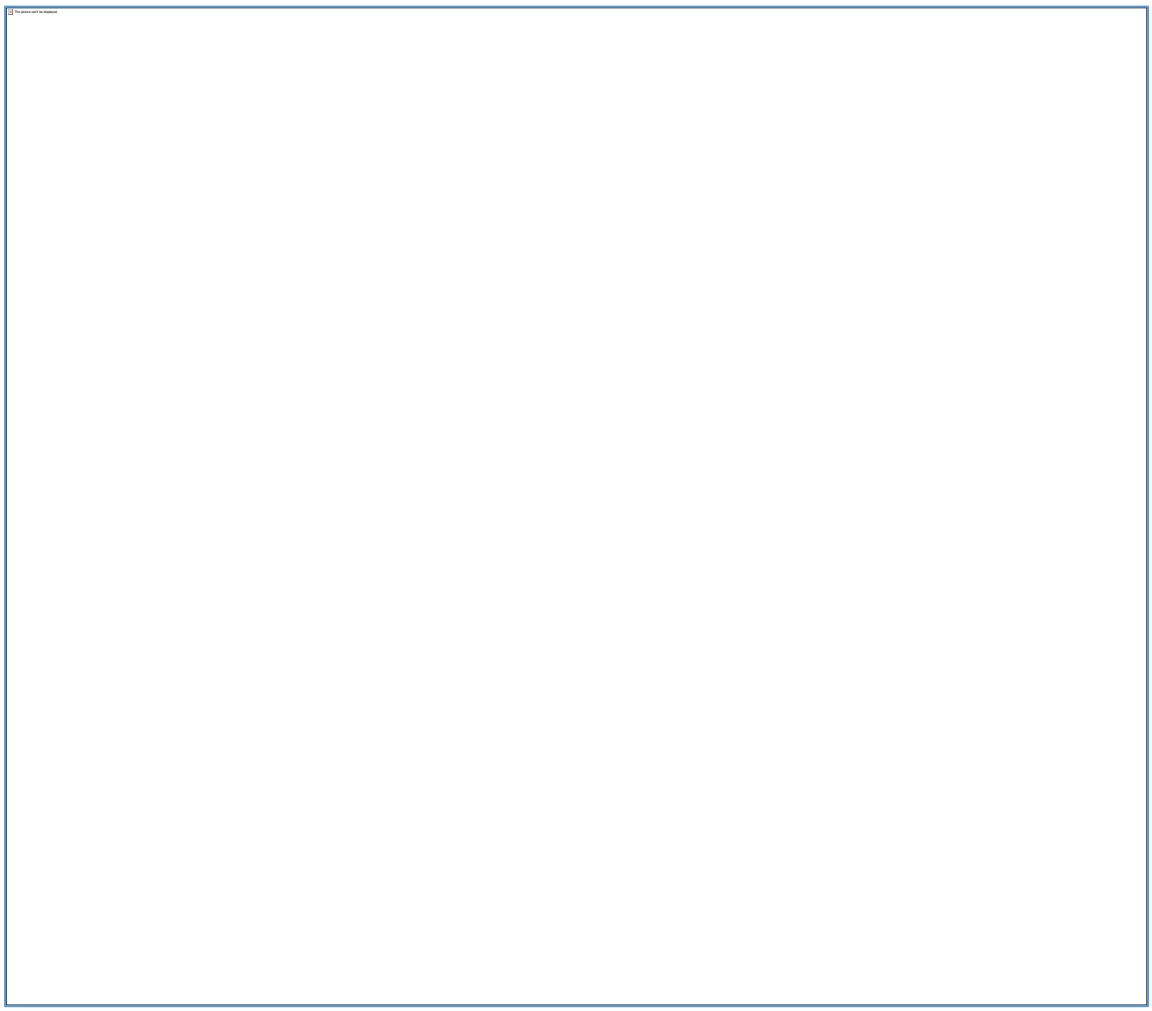
In 2024-25, the Technical Regulator monitored the progress of the continued construction of ELS' new LPG distribution networks in Mount Barker located at the

Adore (28 customers), Steer (17 customers), Emerald Way (96 customers), Newenham (218 customers) and Bluestone (1506 customers) along with other existing Estates as per Table A1 G1.

The Technical Regulator was advised that, in 2024-2025, ELS continued the expansion of the LPG networks across the various Mt Barker developments with customer numbers expected to grow by 400 in the next year.

The breakdown for each of the estate for ELS LPG networks is demonstrated on Table A1 G1.

Table A1 G 1: ELS LPG Distribution Networks under development in South Australia



AGN continued the construction of its own LPG distribution network at the Glenlea Estate in Mount Barker with numbers increasing to 235 customers connected to the network. The Technical Regulator will be monitoring all ELS and AGN field activities at the sites in Mount Barker to ensure that they are carried out in accordance with the correct technical requirements.

Origin LPG networks at Roxby Downs, Victor Harbor (Rosetta Village), Renmark (Jane Eliza Estate), Port Lincoln, Wallaroo and Cape Jaffa (Anchorage Estate) saw minimal change to customer numbers (2,283 customers) and no expansion of the network see figure A1 G10).

Figure A1 G 10: Total numbers of origin LPG distribution networks in SA

Elgas LPG network at Hanlins rise in Clare saw no change to customer numbers (65 customers) and no plan in expansion of the network.

The total numbers of customers and the total for each of the LPG distribution network is demonstrated on figure A1 G 11

Figure A1 G 11 : Total customer numbers for LPG networks as of each year.

6.4.1. Auditing for safety and technical compliance

A desktop audit was conducted of Origin Energy's LPG network Safety and Operating Plan (SAOP). The audit found the Origin SAOP met the requirements prescribed by the *Gas Act 1997*, the *Gas Regulations 2012*, Origin's distribution licence conditions, safety and technical standards, and industry codes.

The Technical Regulator was satisfied that the risks to the community from the operation of all the LPG distribution networks are being managed to an acceptable level by competent and appropriately trained personnel.

6.4.2. Incident reporting

There were no deaths or personal injuries from the LPG distribution networks incidents in South Australia during 2024-2025.

Origin reported the Pt Lincoln LPGas network was damaged by a third party excavator resulting in 134 residential and 5 commercial customers being affected for more than 10hours. No notification from Origin to the Technical Regulator was received within the required time frame as per the *South Australian Gas Regulations 2012 section 50 (1) and (2)*. Origin were requested to investigate and report on the lack of communication.

ELS reported no gas leaks from the LPG distribution networks in Mount Barker in 2024-2025 to the Technical Regulator.

Elgas reported no gas leaks from the LPG distribution networks in Clare in 2024-2025 to the Technical Regulator.

AGN reported no gas leaks from the LPG distribution network in Glenlea Estate Mount Barker in 2024-2025 to the Technical Regulator.

Section A7: Gas Installations

7.1. Natural Gas and LPG Installations

7.1.1. Residential and Light Commercial Gas Installations

The Technical Regulator is responsible for ensuring that installation work is performed in a safe manner, using appropriate methods and materials that are compliant with relevant Standards. Generally, gas installation work involves the connection of new gas appliances, pipework, flueing and ventilation where necessary. Figure A1 G12 shows the approximate number of new or modified installations and connections over the past 5 years.

Figure A1 G 12 : New or modified installations and connections

In larger new residential developments such as Mount Barker Estate where natural gas is not available, LPG (Propane) is supplied by means of reticulated gas network systems supplied from large storage tanks located on the perimeter of the estate.

7.1.2. Industrial and Large Commercial Gas Installations

The OTR monitors industrial and commercial, elevated pressure and complex gas installations. There were several complex projects and site visits throughout the 2024-2025 period such as the Thomas Foods submission approval, Nyrstar Port Pirie gas conversion project, Liberty Steel Whyalla Site visit. The OTR undertook desktop reviews of all initial designs and visited the work sites on numerous occasions for each project. Where compliance issues were identified the installations were modified by the contractors to meet the deemed to satisfy requirements of AS/NZS 5601.1 gas installation standard and performance-based designs.

7.1.3. Thomas Foods Type B appliance and pipework submission

On 11 September 2024, OTR began reviewing a submission for an additional elevated pressure gas outlet service extension from the existing supply within the Thomas Food Plant to supply gas to a new 3-megawatt steam boiler. To account for the additional gas load to be consumed, the gas valve train over pressure protection (OPP) system, located outside of the plantroom, required to be modified to suit this new application. New overhead 100mm copper tube gas line was installed from the outlet of the modified valve train OPP to the new boiler. This new pipework had to be pressured tested and purged prior to going into operation. Commissioning gas for the 3MW Steam Boiler was granted on the 30 September 2024 from one of the approved type B certifiers, this allowed the installers of the appliance to commission and test the operation of the appliance before certification could commence.

Type B certificate of Compliance was issued to Thomas foods on the 14 October 2024, with this certification the appliance can now be run commercially. During this submission process the OTR gas inspectors reviewed and approved the emergency over pressure protection for the site, the site plan design, gas installation risk assessments, the test for soundness and purge plan for this new extension development (see Figure A1 G13).

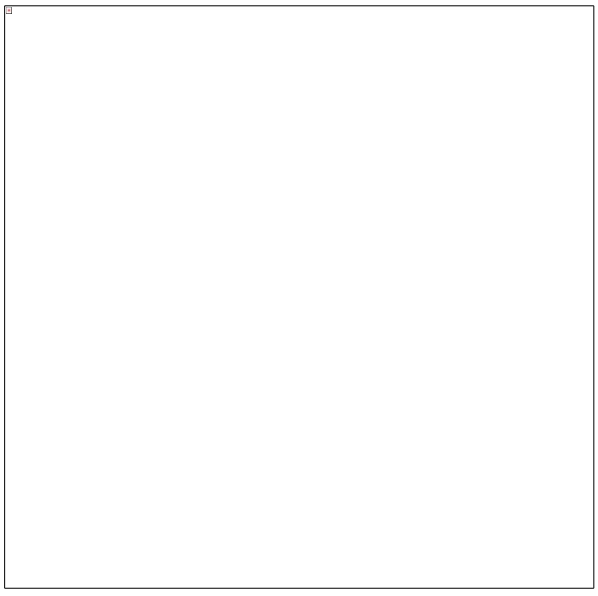


Figure A1 G 13: Thomas Foods gas valve train OPP upgrade

7.1.4. Nyrstar Port Pirie Above 3kPa Submission and approval.

The OTR Gas team received the working procedure for the conversion of Natural Gas (NG) to Liquefied Petroleum Gas (LPG) outlining the procedure for safely and systematically converting the Nyrstar Smelting Facility's burners from NG to LPG during planned pipeline maintenance by Epic Energy.

Nyrstar Port Pirie is a lead smelter in South Australia producing lead and other heavy metals from various ore sources. The smelter normally utilises natural gas in their operation supplied via a pipeline from the retailer Origin Energy. Origin advised the pipeline would be unavailable for 19 days commencing on the 21st of January 2025.

During this shut-down period, LPG was provided in lieu of NG. Origin advised the peak consumption rate was approximately 200 GJ per hour of energy with a total tonnage consumed expected to be 1100 tonnes during the pipeline outage. Origin supplied a 175kL (76 tonne) LPG vessel, 4 feedback hot water vaporisers (supplied by 11 hot water units), skid mounted regulator station, a tanker fill point and vapour supply from the storage tank to customer tie-in point.

The upstream gas supply was monitored by the gas infrastructure team including the installation of LNG to provide additional gas on standby for the transmission line to Whyalla as a back up to the existing line pack pressure already in the transmission line.

The downstream side was monitored by the OTR gas inspectors, the conversion of NG to LPG presented several risks that required careful assessment and robust mitigation strategies to ensure safety and compliance. The inspectors reviewed the risks reports associated with the project which included:

Personnel Requirements - All personnel must be qualified, complete mandatory site inductions and be supervised during purging, burner conversion, and testing.

Communication – Team meetings to discuss risks and devise mitigation plans. Maintain communication with key stakeholders.

Safety and Risk Management – Provide JSEA for all plant areas, adhere to emergency response procedures; ensure shutoff systems are accessible and functional and comply with AS 3814:2018 for gas-fired appliances (type B appliances).

Equipment and Material Handling - Ensure tools are calibrated and nitrogen cylinders connections, gauges, regulators, vaporizers are checked before use.

Documentation and Compliance – Provide the detailed logs of purging, combustion settings, and safety tests including burner test sheets and inspection reports to the OTR.

The conversion process required nitrogen gas to purge the NG from the outlet service, flares were used in various locations to burn off the NG. When completed, LPG was introduced into the system, the LPG purged the nitrogen out, gas detectors were used to establish LPG in the system to ensure there was no air mix with the LPG in the pipework. All appliances were converted to LPG. Part of the appliance conversion is to adjust gas pressure and primary air for combustion and checking of appliance safety devices, all this work was completed by the conversion teams.

When Epic Energy completed their program maintenance work, NG was restored to Nyrstar. This now included the reverse of the above, the LPG was flared out of the system using nitrogen gas, NG was introduced back into the outlet to purge the nitrogen, when this was done safely all of the gas appliances were converted back to NG and underwent adjustment and testing for operational and safety requirements. All appliances were checked they adhered and compliant to their type B testing.

During the purging processed, the OTR inspectors attended site to monitor the progress (see Figure A1 G 14, Figure A1 G 15, Figure A1 G 16.

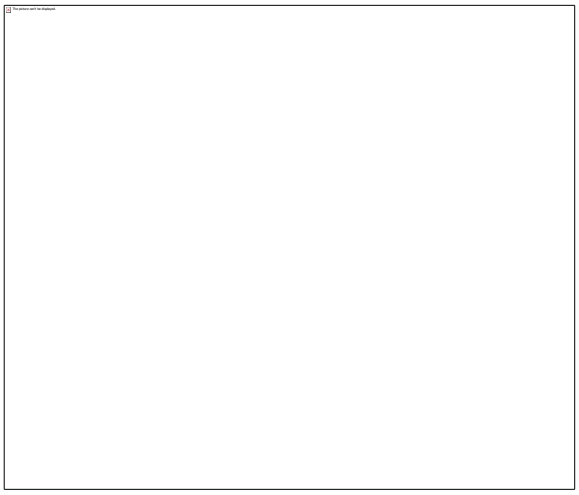


Figure A1 G 14: : Nyrstar Port Pirie temporary 175kL LPG vessel installation

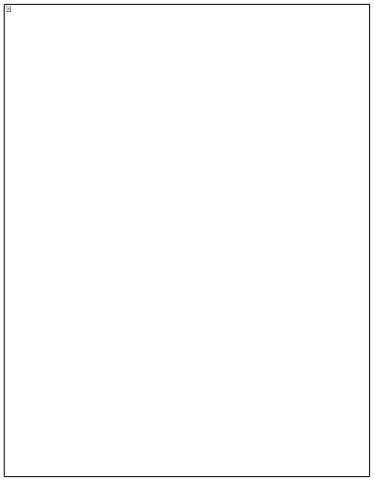


Figure A1 G 15: Nyrstar Smelter Port Pirie

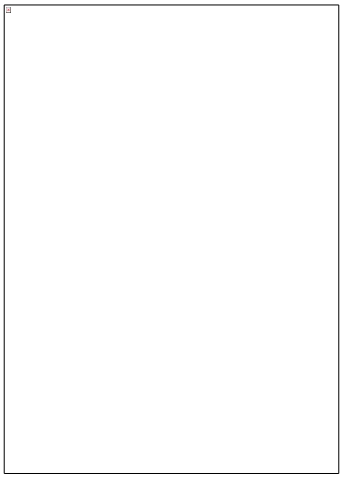


Figure A1 G 16: Flare stack in preparation for purge

7.1.5. Liberty Steel, Whyalla

On the 25 March 2025 two inspectors from the OTR attended Liberty Primary Steel to conduct a site visit. The purpose of this visit was twofold. Firstly, it provided the inspectorate with an opportunity to gain an understanding of the overall gas installation and equipment on site, and secondly it allowed the opportunity to audit Type B compliance of the gas equipment. During this visit the inspectors visited the following locations:

1. Epic Energy PMRS
2. Blast Furnace
3. Rolling Plant
4. Steelmaking Plant
5. Pellet Plant

The natural gas for Liberty primary steel is provided direct from an Epic Energy Pressure Regulating Meter Station (PRMS). The outlet pressure is set to 700kPa for the plant with and additional outlet supply of 1850kPa for the co-generation turbine.

In addition to natural gas, the site also utilises waste gases from the blast furnace (Blast Furnace Gas) which is processed before being piped to specific locations at 4.5kPa. This waste gas is injected with Natural Gas at a ratio of 1.5:1 to create SCOG (Simulated Coke Oven Gas), providing a similar WOBBE index to natural gas (see figure A1 G17).

Figure A1 G 17: Epic Energy PRMS.

Blast Furnace

The Blast Furnace consisted of 18 Natural Gas Injection locations where it is mixed with oxygen enriched air to produce a hot blast into the furnace (see figure A1 G18).

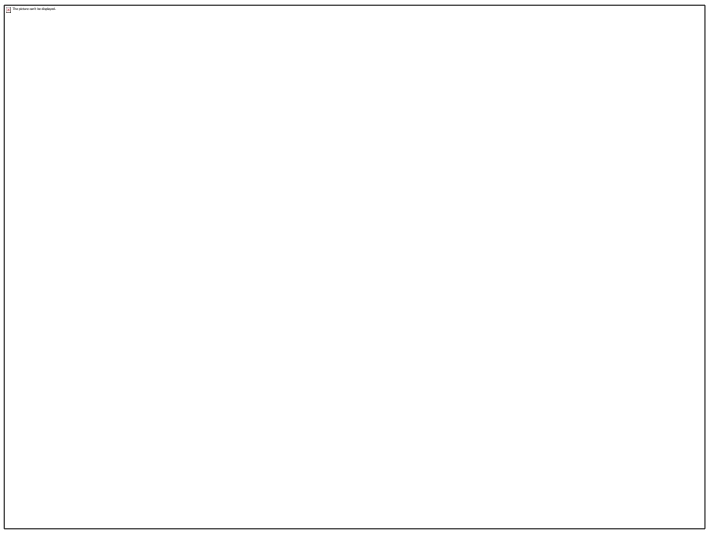


Figure A1 G 18: Blast Furnace

Rolling Plant

Within the Rolling Plant is the Reheat Furnace that consists of 10 burner zones controlled from the control room. The Reheat furnace will take a slab of steel at ambient temperature and reheat it in the furnace to 1200 °C. At this temperature the steel will start to deform allowing for it to be rolled into structural steel products such as rails, universal beams, angles iron etc (see figure A1 G19).

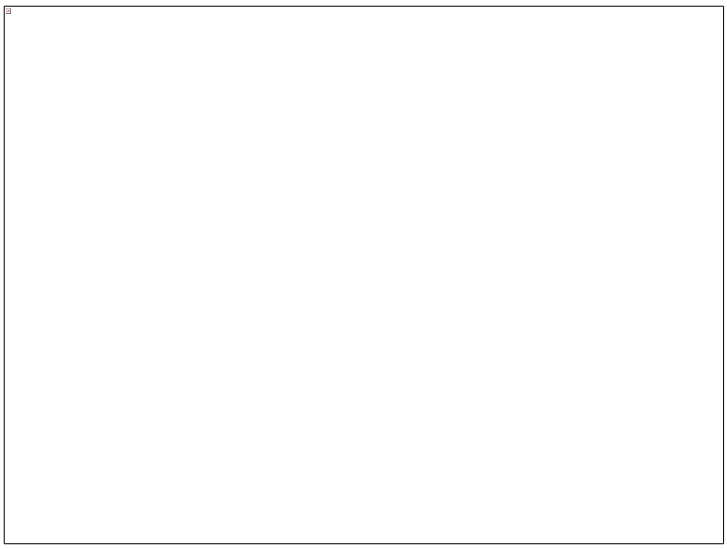


Figure A1 G 19: Appliance valve train and individual burner zone.

Steelmaking Plant

The Steel Making Plant consisted of various equipment with 14 individual type B appliances viewed throughout the walk through by the OTR.

Type B appliances included Steel Car Heaters, Hotwork Heaters and Tundish Heaters. These appliances play a crucial role in the steel making process by maintaining the proper operating temperature for crucibles and ladles, ensuring they are ready to receive liquid steel. After receiving the liquid steel, they are transported to the steel refining stations, and eventually to the continuous casters, where the liquid steel is cast into billets or slabs (see figure A1 G20).

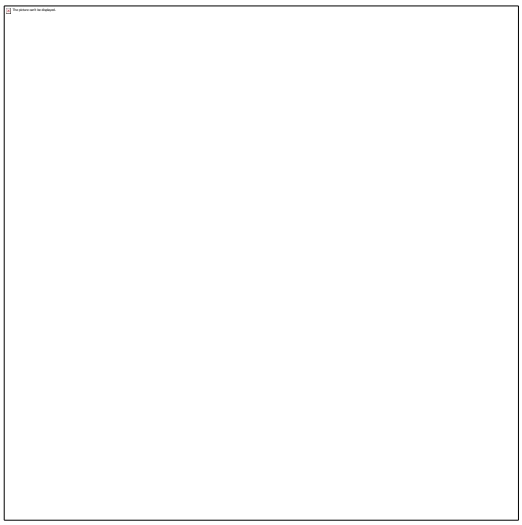


Figure A1 G 20: Ladle full of iron poured into a vessel ready for processing into steel

Pellet Plant

The Pellet Plant consisted of 2 x duct burners and 1 x kiln. The process is monitored 24/7 from the control room (see figure A1 G21).

Figure A1 G 21: Pellet Plant

Although we were unable to visit every location on site, the areas we did visit were attended by individuals who not only had a thorough understanding of the process but also exhibited a comprehensive knowledge of the gas equipment under their

control. It is our understanding that all individuals who conduct work on type B gas appliances have completed the type B gas fitting course.

We extend our sincere thanks to everyone who took the time to show us around the site. Their knowledge, experience, and willingness to engage in discussions about all aspects of the gas installation were greatly appreciated.

7.1.6. Industrial and Commercial Type B Appliances

There is a legislative requirement for Type B (industrial) gas appliances to be certified to AS 3814 before commercial operation. The OTR monitors Type B appliance certifications through accredited certifiers. Submissions are provided to certifiers by equipment suppliers, manufacturers, or commissioning agents for desktop review. If satisfactory, temporary commissioning gas is granted. The equipment can then be commissioned under supervision before on-site safety testing and certification. The OTR monitors Type B appliance certifications by certifiers. In the 2024-2025 period, there were 120 Type B appliances tested and certified.

Type B appliances are individually tested and certified by private certifiers accredited by the Technical Regulator prior to commercial operation. See Figure A1 G 22 as an example of Type B appliances.

Figure A1 G 22: Photo of a Type B powder coat oven

7.1.7. Investigation

Typical complaints / investigations are non-compliant ventilation requirements for outdoor appliances.

The OTR reactively investigates complaints and reports of incidents/accidents involving gas installations and appliances. Typical complaints / investigations are non-compliant ventilation requirements for outdoor appliances.

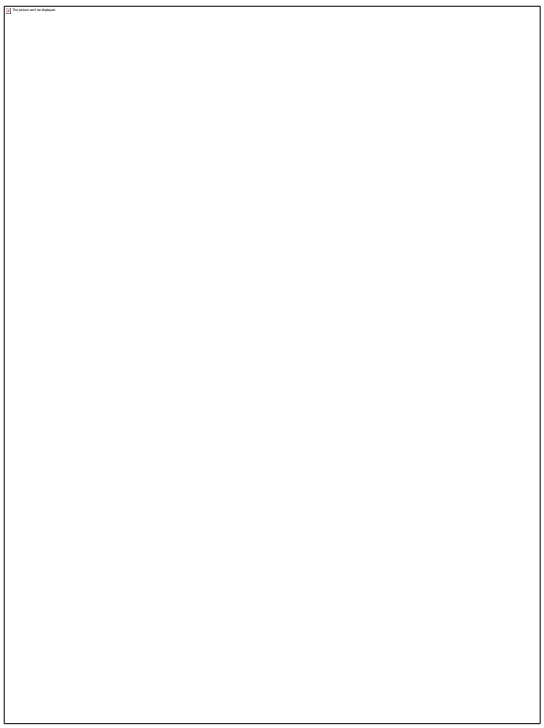


Figure A1 G 23 shows non-compliant gas installation, multilayered piping located outdoors exposed to UV light. Multilayer (yellow pipe) is a composite material, yellow in colour (to identify it as gas piping), it is made up of a polyethylene outer layer with an aluminium middle layer followed by a polyethylene inner layer. Multilayer gas piping Installer instructed to return and replace with new metallic piping.

Figure A1 G 23: Non-compliant ventilation

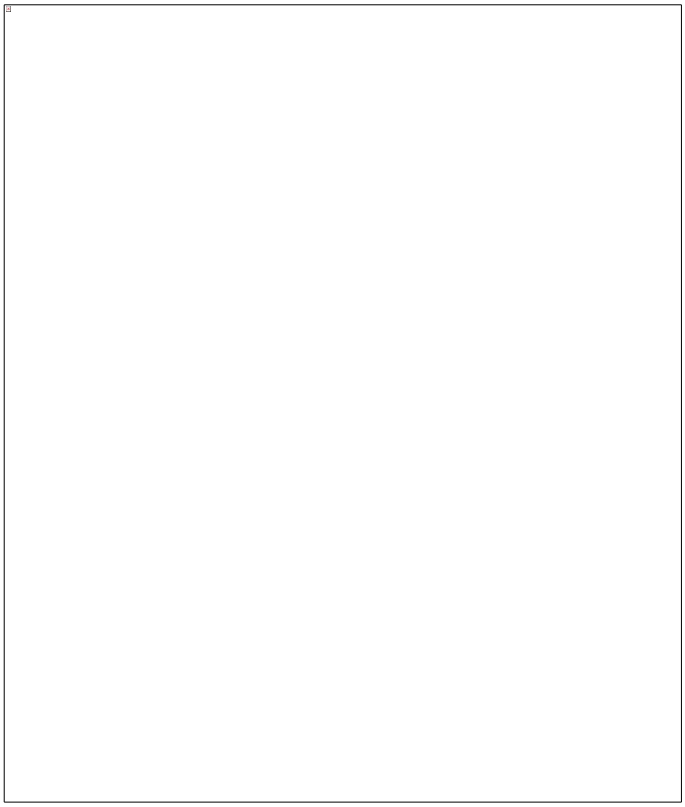


Figure A1 G 24 showing a new outdoor model gas water heater (HWS) and a 9kg LP Gas cylinder located inside a fully enclosed carport. The HWS replaced an existing internal model HWS (see existing flue pipe above new HWS). The enclosed area has insufficient ventilation for outdoor model gas appliances. The installer was instructed to relocate the HWS to an appropriate outdoor location. The gas inspector moved the 9kg LP Gas cylinder outdoors.

Figure A1 G 24: Non-compliant HWS location

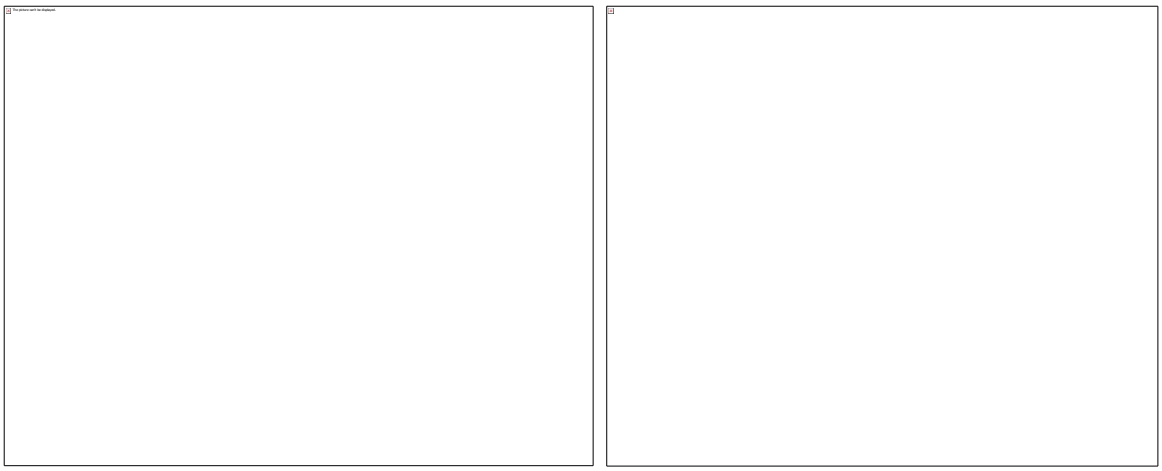


Figure A1 G 25: LP Gas connection to a NG consumer piping system

Figure A1 G 25 shows a 9kg cylinder has been connected to a residential home consumer piping installation designed for Natural Gas (NG). The NG meter was removed due to a dangerous non-compliant installation, however the owner ignored the safety advice and connected LP Gas to the installation without rectifying the original non-compliance, without converting the appliances from NG to LPG and failed to provide suitable over pressure protection (OPP). The single stage regulator connected directly to the cylinder provides no protection downstream in the event of regulator failure potentially allowing 1000kPa plus gas pressure to enter the houdehold.

Figure A1 G 26: Confiscated hose assembly and 2-burner cooktop

Figure A1 G26 shows a hose assembly meant for a 2-burner cooktop and an uncertified cooker. Both items were brought into the country from abroad, Australian Customer officials ceased both items and immediately contact the OTR for advice. A quick inspection by the inspector found the assembly non-compliant, both the hose and regulator not approved components in Australia, in fact the hose itself was a modified shower rose hose meant for water. The 2-burner cooktop was not a

certified appliance in Australia, also, the barb fitting on the appliance is not an approved method of connecting gas appliances. Both the hose assembly and the 2-burner cooktop were taken by the OTR and the owner issued a warning.

7.1.8. Auditing for Compliance

Proactive Audits

24,939 residential and light commercial gas installation jobs were completed in South Australia during 2024-2025 and of these installation jobs 974 were audited. Audits are generated by our senior regulatory compliance officer who responds to gas eCoCs that have been submitted by randomly sending text messages to owner / operators of a newly installed gas installation. The text message advises recipients that an authorised gas inspector will be in contact with them shortly to arrange an onsite inspection. Also, owner / operators who receive a submitted gas eCoC can contact our office via a link in the email and register for expression of interest to have gas work recently completed audited and safety checked.

1,278 large commercial and industrial gas installations were completed during 2024-2025 and the Technical Regulator pro-actively audited 359 of these jobs for compliance with AS 3814– Gas Fired Industrial and Commercial Appliances and AS/NZS 5601 – 2013 Gas Installations.

When undertaking complex audits, OTR inspectors inspect the following as applicable: NG meter or LPG cylinder/tank placements, pipe work is fit for the application, appliance types and evidence of certification, over pressure protection, flueing, ventilation systems and compliance documentation covering electronic Certificates of Compliance / pressure test results, purge plans and commissioning, and approval for Type B appliances. Installations are assessed to ensure that they meet the requirements and standards called up by the *Gas Act 1997*.

Above 3Kpa Submissions

The OTR received and approved 20 above 3kPa submissions.

Audits of permanent gas installations at tourist and caravan parks

20 caravan and tourist park gas installations were audited in 2024-2025.

Installation Audit Results

The number of proactive audits of residential and light commercial installations that were completed in the year was 974, with a split of 704 inspections for natural gas versus 270 for LPG installations. LPG installations are audited at a higher relative rate for the population base for several reasons:

- LPG is potentially a more hazardous fuel as it is heavier than air with a higher heating value.
- Because these jobs are often found in more remote locations there may be the perception that compliance with the Standards is not so important because there is less chance that the Technical Regulator will audit the work.

- Often existing gas work on site has been performed by unlicensed persons due to the limited availability of skilled licensed persons in some areas or the DIY mentality in some remote areas.

Figure A1 G 27 demonstrates installation Audits over the past 5 years.

Figure A1 G 27: Numbers of installation auditing

Enforcement activities for non-compliant gas installations

A total of 82 non-compliance letters were issued during the year, 67 to gas fitting contractors and 15 non-compliance letters to owners. 7 expiation notices were issued in 2024-2025 (see Figure A1 G 28). The Technical Regulator prefers that non-conformances are addressed and rectified by the gas fitter as part of their remediation of work and education. This results in a positive outcome for the consumer in that the installation is made compliant and the gas fitter actively learns from their mistake. Gas fitters also lose income earning opportunities while rectifying their work. Taking legal action may introduce the risk of not facilitating remediation of the actual non-conformance (see Figure A1 G29)

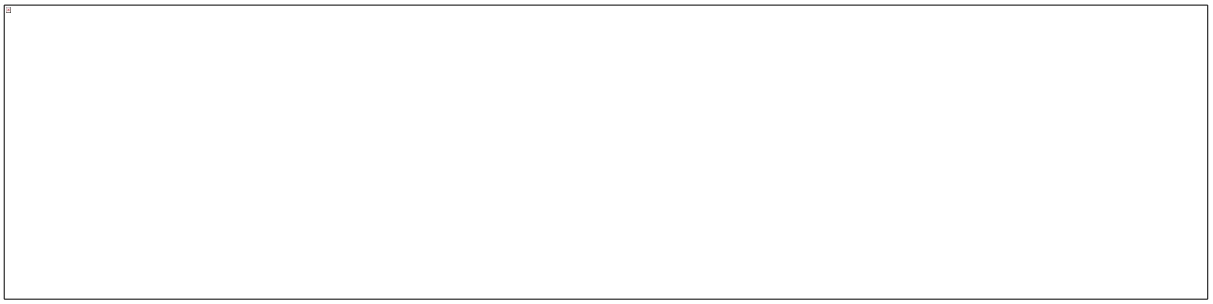


Figure A1 G 28: Enforcement activities undertaken by OTR

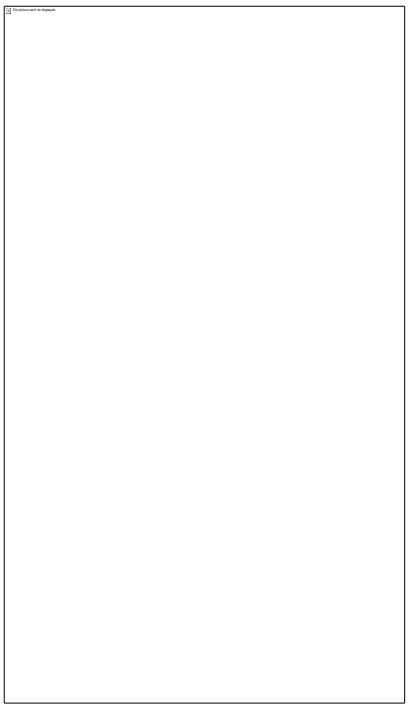


Figure A1 G 29: Public warning

The numbers of enforcement activity undertaken by the OTR over the past 5 years are demonstrated on Figure A1 G 30 and Figure A1 G 31.

Figure A1 G 30: Enforcement activities

Referrals to CBS

There were three referrals to CBS during the year. People found to be performing gas installation work whilst unlicensed, unregistered or performing work outside the scope of their licence or registration are referred to the licensing authority CBS for action. CBS investigates the matters and considers the recommendations made by the Technical Regulator in making their deliberations.

Figure A1 G 31: Numbers of Enforcement activities

7.1.9. Gas Installations incidents

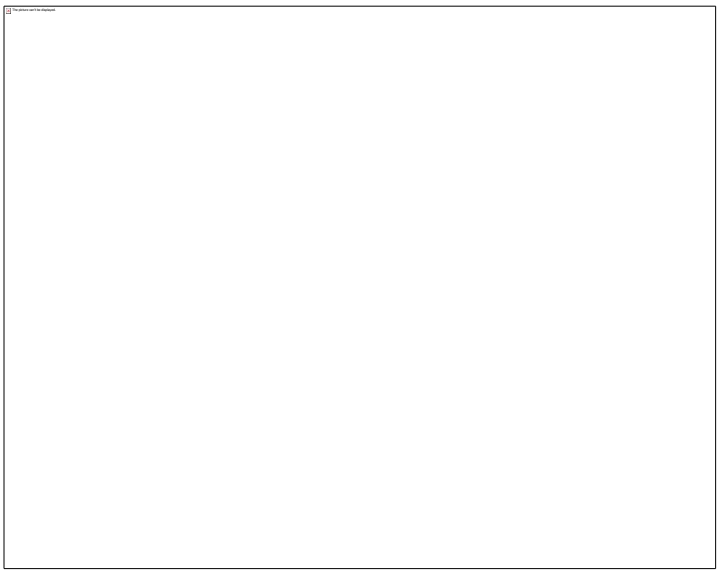
In 2024-2025, there were a total of 9 gas related incidents reported to the OTR resulting in injury or property damage. 4 of the reported incidents were LPG related and 5 were natural gas related. They were all investigated and are summarised as on table A1 G2.

Table A1 G 2: Summery of gas incident investigation for financial year 2024-25

Incident	Incident date	Location	Incident type	Details
1	31/07/2024	RIVERLAND	LPG fire	Minor damage.
2	05/08/2024	EDINBURGH NORTH	Type B NG fire	No injuries reported.
3	17/08/2024	PENNESHAW	LPG explosion	**Serious gas accident:** Open end on gas isolation valve resulted in explosion when worker tried to light the deep fryer. **Serious injury:** Victim of the explosion was admitted to hospital for treatment of serious burn injuries to 15% of total body surface area.
4	28/08/2024	WILLUNGA	Flash back on butane camping stove used indoors	Outdoor camping stove used indoors; gas canister had not been locked in correctly causing a flash back. No injuries were reported for this incident.
5	04/09/2024	WALKERVILLE	NG fire	SAMFS believed the fire to be caused by an electrical failure and the gas fire to be a secondary fuel source. **Serious injury:** Victim of the fire was admitted to hospital for severe burns resulting in a coma, no further updates on victim received.
6	13/09/2024	MAGILL	NG fire	Open end on supply pipe to previous cooker left uncapped following kitchen renovation which resulted in a fire when the new cooker was ignited. **Injury**: Victim experienced singed hairs to arms when fire erupted, no further injuries reported.
7	22/09/2024	MACCLESFIELD	Type B LPG fire	No injuries reported, localised property damage adjacent to pizza oven.
8	10/05/2025	PROSPECT	NG fire	No injuries reported, significant property damage.
9	18/06/2025	ADELAIDE	NG gas escape	No injuries or building damage reported.

Each of the incident summarised in Table A1 G2 are described in detail below, except for incident 9. Incident 9 was investigated however the outcome indicated no injury, fire or property damage.

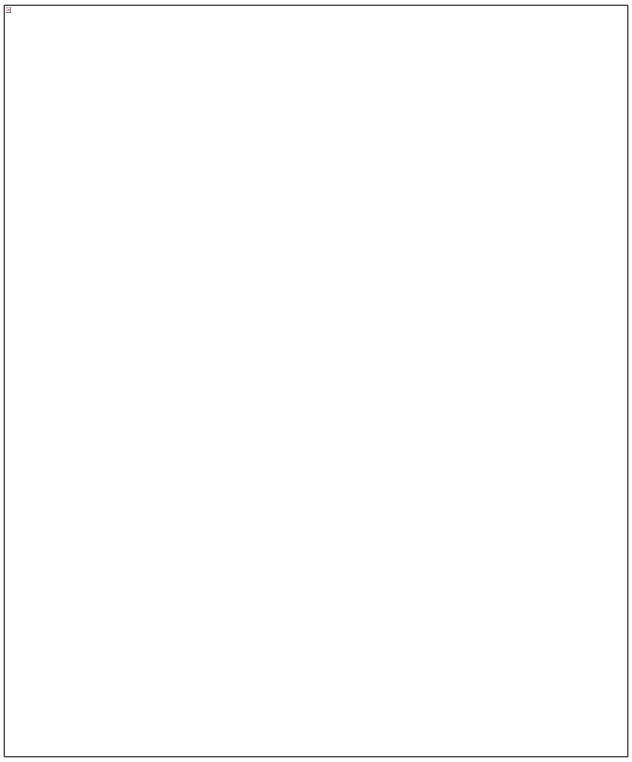
1. LP Gas Fire



- Over-pressure situation resulted at a vaporiser releasing gas from the pressure relief valve.
- Escaping gas ignited resulting in approximately 2-metre flames within the LP Gas compound.
- Members of the public notified the CFS who attended the site along with maintenance staff from the winery where the vaporiser was isolated and made safe
- Despite the incident no reports of injuries and minimal damage occurred only.

Figure A1 G 32: LPG Vaporisers at incident site

2. Type B NG fire in EDINBURGH NORTH



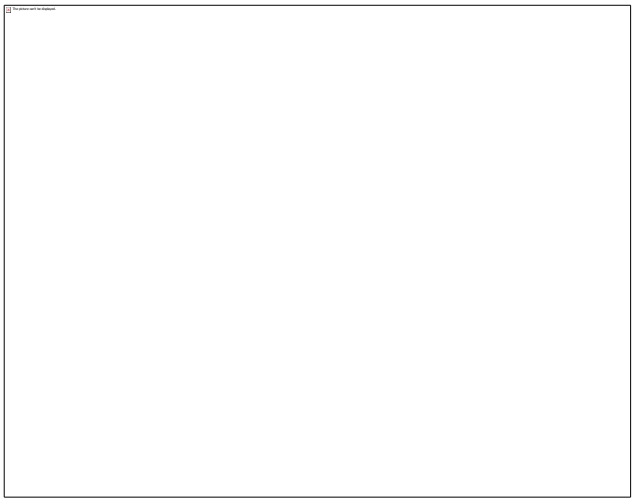
- A sudden release of energy occurred due to the ignition of fat content from obese animals.
- The energy released exceeded the furnace's volume and oxygen supply capacity.
- This caused a rapid temperature increase and excessive smoke/carbon release.
- Flames were observed coming out of the furnace door due to oxygen deficiency.
- Fire services attended the site.
- No injuries or property damage were reported.
- The incident could have been prevented by reducing the fuel load specifically, by placing fewer obese animals in the cremator.

Figure A1 G 33: Equine cremator

3. LP Gas explosion

- On 17 August 2024, around 4:45 pm, a shop assistant began her shift at a takeaway shop and attempted to light the gas pilot on a deep fryer.
- Two gas isolation valves were present: one connected to the deep fryer and one uncapped and not connected to any appliance, hidden behind the fryer.

- Uncertain which valve supplied gas to the fryer, the assistant turned on both valves. This led to an uncontrolled gas flow from the uncapped valve.
- Unaware that there was an uncontrolled gas flow from the uncapped valve, the assistant successfully lit the pilot flame on the deep fryer. As gas concentration around the ignition source reached the lower explosive limit (2.15% LP Gas in air), the unburnt gas ignited.



- A rapid combustion and explosion occurred, causing injury to the shop assistant and extensive damage to the building (see Figure A1 G34).

Emergency services were called; gas supply was isolated. The shop assistant was flown to the Royal Adelaide Hospital for burn treatment.

- OTR gas inspectors attended the site on 27 August 2024 and undertook the investigation.

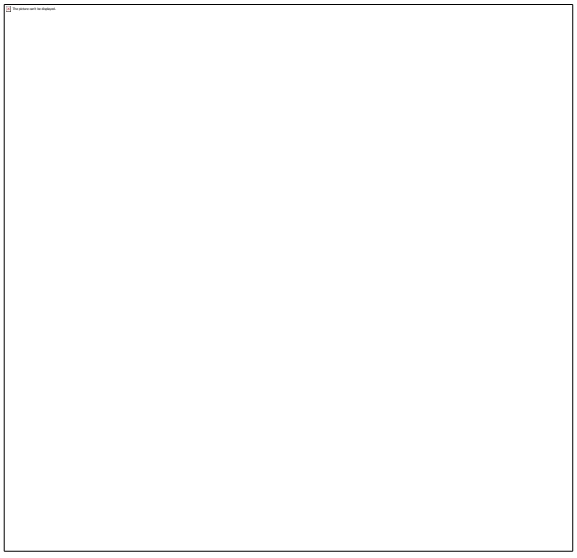
Figure A1 G 34: Fire damaged in takeaway shop

- Inspectors discovered the uncapped ball valve in the open position below an electric cooktop.
- It appeared an appliance had been removed previously, and the person responsible failed to cap the valve, leaving it unsafe (see Figure A1 G35).
- From the investigation the causes of the incident were determined. The incident was caused by the ignition source (pilot flame) and uncontrolled gas flow from the uncapped valve.

Figure A1 G 35: Two isolated valves, Uncapped gas valve on the left

- AS/NZS5601.1:2022 Clause 3.4.3 requires unused outlet or outlet that isn't connected with a quick-connect device to be sealed with a plug, cap, blank flange, or capped or plugged manual shut-off valve.

4. Flash back on butane camping stove used indoors

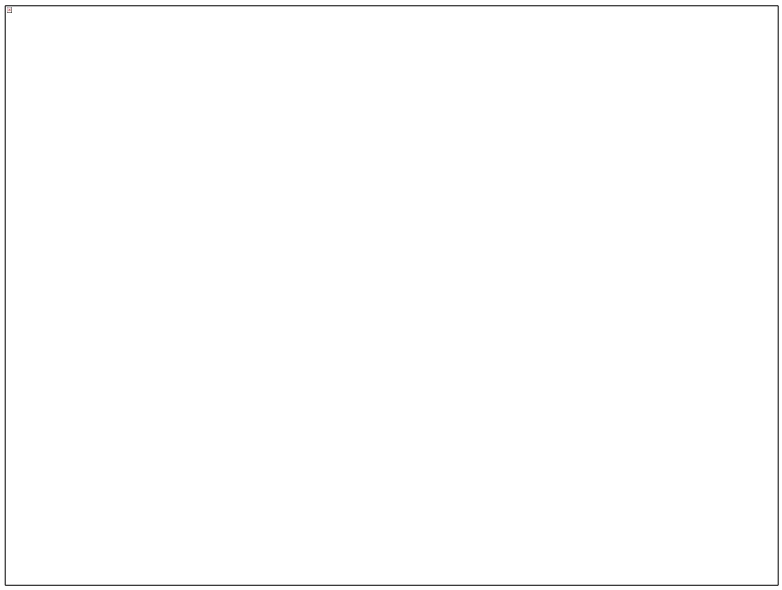


- Employee operating an outdoor butane single burner camping stove indoors
- An oversized pot placed over burner reflecting heat back onto the butane cannister
- Leak occurred where the disposable butane cannister seals against the appliance valve
- Faults included cannister not seated correctly, O' ring deterioration and contamination with foreign matter from the workplace.

Figure A1 G 36: Example of a single burner portable stove that utilising Butane gas

5. NG fire in Walkerville

- OTR gas inspectors attended an incident in Walkerville on 4 September 2024.



- OTR observed extensive property damage, affecting the premises and adjoining businesses (see Figure A1 G 37)
- One individual was injured and treated for burns.
- The MFS believed fire originated in the Butler's Pantry kitchen area where a domestic 6-burner freestanding gas cooker was present but not in use during the incident.

Figure A1 G 37: Fire damaged inside the restaurant

- The gas cookers manufacturer was unknown, due to the extensive fire damage. During the incident the burner taps were off, indicating the appliances were not operating. In addition, all burners had flame supervision devices, shut the gas off to the burner if heat from the flame is no longer detected.
- The fire caused extreme heat, melting the copper consumer gas outlet pipe, above the rangehood, compromising its structural integrity.
- The melted pipe resulted in an open end, allowing uncontrolled gas flow that fueled the fire.

- The uncontrolled gas leak continued until the gas supply was shut off at the building.
- The rangehood and adjoining storage racks were destroyed in the fire (See Figure A1 G 38).

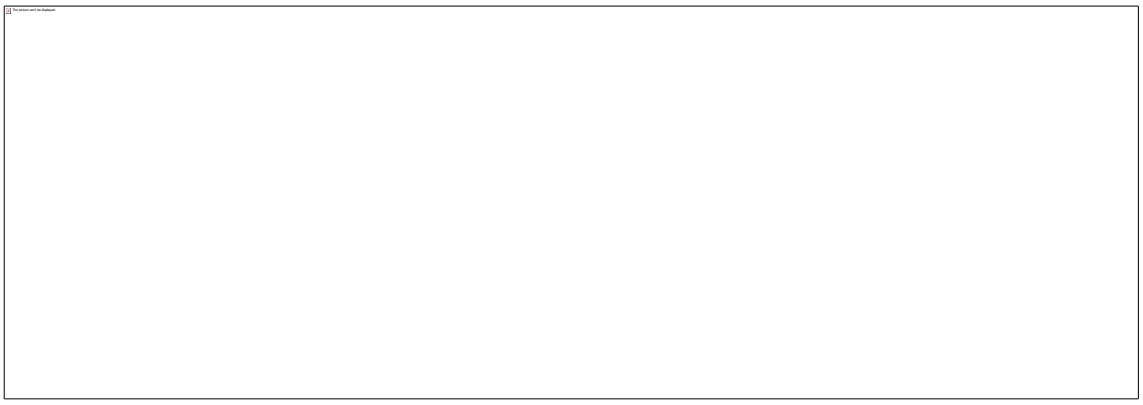
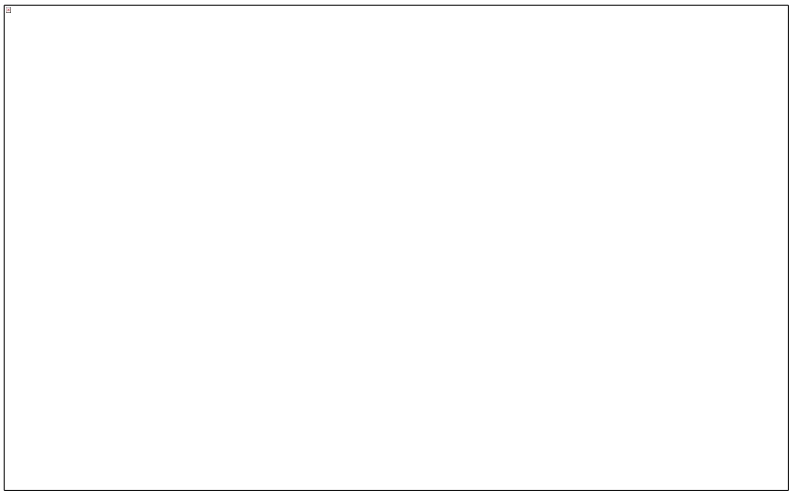


Figure A1 G 38: Damage to the copper pipe directly above the domestic cooker

- Investigation found a cordless drill battery charger charging, on top of the rangehood to be the likely causes of the incident.
- Due to extensive damage, a soundness test on the outlet service could not be performed.
- AS/NZS5601.1:2022 Clause 3.4.3 highlights the requirement to seal unused gas outlets to prevent such hazards.

6. NG fire in Magill

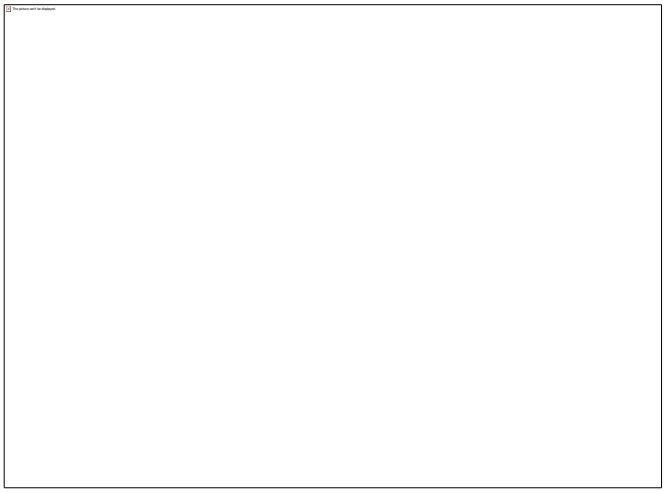
- Kitchen renovations, old kitchen was demolished by one contractor.
- Another contractor fitted the new kitchen.
- The installing gas fitter rang new line from HWS to new cooktop and oven



- The new contractor wasn't aware the existing pipework was still installed and not capped off
- Owner went to light cooktop and a flashback explosion occurred. The owner suffered a minor injuries
- The installing gas fitter at no point in time tested the outlet service for soundness.

Figure A1 G 39: Existing pipework behind new cooker not capped off

7. Type B LPG fire



- Fire at rear of hotel inside wall lining backing onto pizza oven.
- Copper press fitting in wall failed due to excessive heat emitting from the oven
- Investigation found thermostat probe moved out of oven, unable to control temperature
- Minor structural damage to building

Figure A1 G 40: Fire damage to rear wall of property

8. NG Fire in Prospect

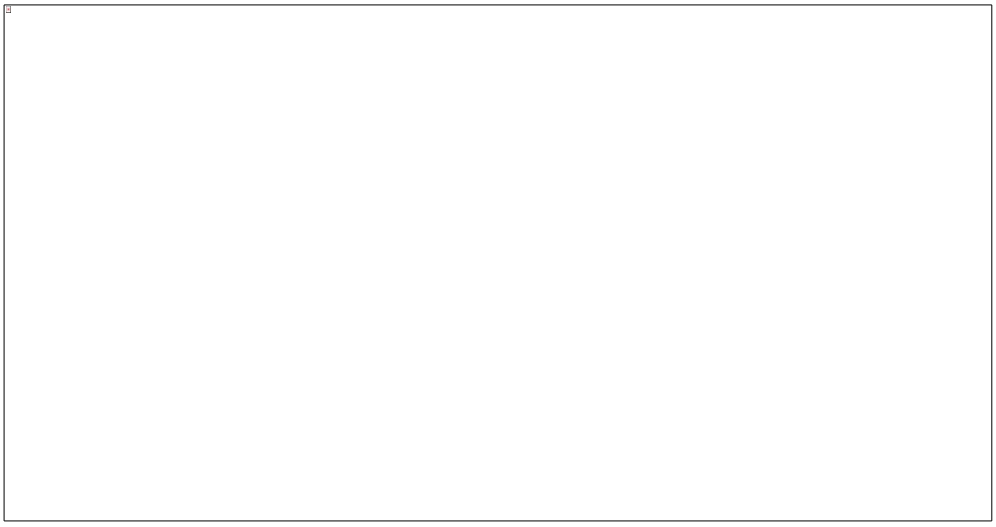


Figure A1 G 41: significant fire damage

- Fire occurred in a restaurant kitchen and spread into the ceiling space above.
- The fire extended laterally through the ceiling into adjoining commercial buildings, causing heavy fire damage and property loss.
- Significant fire damage and property loss were reported, especially above the internal ceiling. Fire materials and debris dropped into the restaurant interior.
- MFS identified the point of origin as one of the woks on the wok cooker.
- MFS requested OTR to investigate potential faults with the wok cooker.
- OTR found no obvious faults; all controls were functioning correctly per manufacturer specifications.

The trends of Incident such as injuries, Fatality and property damages attributed to gas over the past 5 years are demonstrated on Figure A1 G 42.

Figure A1 G 42: Comparison of Significant Incident Statistics

7.1.10. Electronic Gas Certificates of Compliance (eCoC)

The total numbers of gas eCoC submitted over the last 2 years is demonstrated on figure A1 G 43. On average approximately 2,155 gas eCoC get submitted each month.

Figure A1 G 43: Gas electronic certificate of complaint submitted.

7.1.11. Communication and Education

Industry Liaison and Support

The Technical Regulator provides information about Standards to gas fitting contractors, architects, and engineers, as well as to commercial and industrial users of gas. During the year, staff handled approximately 9423 technical enquiries relating to gas installations or appliances.

The OTR has been proactive reaching out to the gas industry educating the gas industry with the requirements of the AS/NZS5601.1 – 2022 Gas Installations Standard. The OTR has provided presentations in conjunction with the Master Plumbers Association for metropolitan and regional areas to promote compliance and gas safety. The OTR provides technical and safety bulletins along with bulletin updates to keep the industry abreast of changes in standards and legislation.

The Technical Regulator has developed several technical guides and bulletins which address the most asked technical gas enquiries. These are provided at no charge, and, in some cases, we have different versions for the public and the trade depending on the target group.

Technical Presentations

The gas installation and appliance safety team has conducted 35 presentations for 2024-2025 to the gas industry.

Section A8: Gas Products

The Technical Regulator conducts audits of retailer stores and online marketplace with a view to ensure compliance with the *Energy Products (Safety and Efficiency) Act 2012* and to eliminate the sale of uncertified gas appliances in South Australia.

The primary issue is the regulation of appliances sold via online marketplaces, i.e. eBay, Facebook marketplaces or Amazon. The Technical Regulator has been collaborating other regulatory agencies in other jurisdictions to achieve better outcomes at a national level. The formation of a working group with other regulators aims to identify ways which reduce the risk of unsafe electrical and gas appliances sold via online marketplaces to Australia and New Zealand consumers.

In addition to the online marketplaces working group, the Technical Regulator has been actively auditing small retailer stores using a risk-based approach. Initially, the Technical Regulator provides education and warning letter to the store owners During subsequent audits, if the store is still selling uncertified appliances, the Technical Regulator will seize and retain the uncertified appliances. In addition, the store owner will be issued with an expiation notice, requiring the fine to be paid within 28 days.

In 2024-2025 the Technical Regulator audited 45 small retailer stores and requested the removal of several uncertified appliances. The Technical Regulator issued 9 warning letters to 7 businesses and 5 expiation notices and seized 15 uncertified gas products (see Figure A1 G 44).

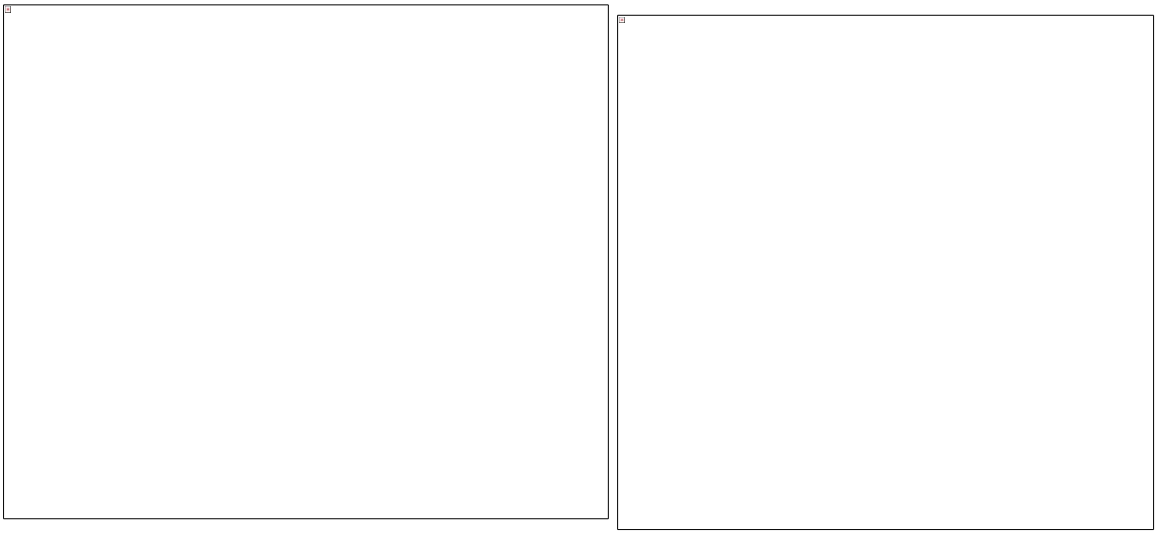


Figure A1 G 44: Example of uncertified appliances seized by OTR in 2023-25

Section A9: Gas Regulatory Coordination

9.1. Committee Representation

The Technical Regulator is represented on, or has provided valuable technical comments, to several Standards Australia committees as well as many other committees, forums and associations.

9.1.1. AG-001, Gas Appliances Committee

In 2024-2025, the Technical Regulator participated in the AG-001 Gas Appliance Committee and as a representative of the GTRC. The committee convened periodically throughout the year to discuss and review safe and efficient utilisation of gas through the development and review of technical standards. To prepare technical standards for safety and performance requirements of domestic gas appliances, including LPG gas portable and mobile appliances: commercial gas appliances and commercial catering gas equipment.

The following projects were undertaken during 2024-2025:

- AS 4563:2022 Amd 1:2024 Commercial catering gas equipment was amended and published in December of 2024. Inclusion of Nb gas testing.
- AS 3645 - Essential requirements for gas equipment. Amendment to the definition of gas (hydrogen as a gas type). Published August 2025
- AS/NZS 5263.1.13 – safety and performance of gas powered portable generators. Ongoing, to be published late 2025.

9.1.2. AG-008, Gas Distribution Committee (AS/NZS 4645)

In 2024-2025, the Technical Regulator participated in the AG-008 Gas Distribution committee as a representative of the GTRC. The committee members worked through a project proposal to address the future amendments to all three Parts of Gas Distribution Standard AS/NZS 4645 (Part 1: Network Management', Part 2: 'Steel pipe systems' and Part 3: 'Plastic pipe systems'), which was approved by Standards Australia in early 2025. Since then, the committee started meeting every two months and divided the work across 26 working groups to cover all the issues that had been raised in the last few years.

The main areas of amendments for the cCommittee's consideration covered the following: gas meter locations requirements, formal risk assessment criteria, gas quality assessment, gas incidents register systems and implementation of standardisation for Future Fuels e.g. hydrogen, biomethane and biogas.

It is expected that the project will take about two years to be completed.

9.1.3. AG-010, Natural Gas Quality Specifications

Following a proposal submitted by the Technical Regulator and approved by Standard Australia in May 2023, the AG-010 committee was reactivated and the Technical Regulator appointed as a chair of the committee.

The committee is principally responsible for the review of AS 4564 – General Purpose Natural Gas which had last been published in June 2020.
AS 4564 lists the general characteristics of natural gas to be used for industrial, commercial or domestic use. Most jurisdictions call up this Standard in their legislation relevant to natural gas.

The scope of the revision was mainly around the inclusion of low level of hydrogen blends and amendment to existing limits to facilitate the injection of biomethane in gas networks without negative impact on end-users. The proposal was supported by evidence from research in Australia and current overseas practices. The update to the Standard was deemed an important step to facilitate the development of renewable gases in Australia.

The committee met several times in the second half of 2024 and completed drafting in October 2024, ahead of schedule. Public comments were sought in early 2025 and after addressing the comments received, the committee approved the new revision of the Standard in April 2025 and publication of the revised Standard occurred in July 2025.

9.1.4. ME-093 Hydrogen Technologies Forum

The Technical Regulator attended each of the quarterly forum organised by ME-093 to provide updates on the work of the committee. The forum is an opportunity for interested parties not part of the committee to get updated on the work of ME-093.

The Technical Regulator is also part of Working Group 11 of ME-093, a working group set as a liaison for all gas networks and gas appliances matters. The working group met four times during 2024-25 to discuss ongoing projects from various gas committees relevant to ME-093.

9.1.5. AG-006, Gas Installation Committee (AS/NZS 5601)

The Office of the Technical Regulator (OTR) continues to provide representation on behalf of the Gas Technical Regulators Committee (GTRC) to the AG-006 Gas Installation Committee, responsible for the ongoing development and revision of the AS/NZS 5601 standards:

- **AS/NZS 5601.1:2022** – Gas Installations, Part 1: General installations
- **AS/NZS 5601.2:2020** – Gas Installations, Part 2: LPG installations in caravans and boats for non-propulsive purposes

The AG-006 technical committee has continued to convene throughout the financial year with 4 full technical committee meetings held in July (online), October (Sydney), March (Sydney) and May (Adelaide). 7 Technical Committee working groups were held throughout the year, with all these online.

Committee Activity Highlights

The committee has been actively progressing revisions to the standards, particularly in preparation for hydrogen integration. Working Groups (WGs) have been established to conduct mapping exercises focused on key areas for hydrogen gas installation, including:

- Purging
- Ventilation
- Flueing
- Gas tightness
- Materials/components
- Gas detection
- Commissioning of installations

Traffic Light System for Clause Assessment

To manage the revision scope, a traffic light system has been adopted:

- Green – No change required
- Orange – Clause requires review
- Red – Clause requires change

Standards Revision Objectives

The upcoming revisions aim to define and align performance-based and deemed-to-satisfy clauses, revisit and update pipe sizing tables, harmonise terminology across related standards, introduce new terms, especially for hydrogen installations, ensure alignment with ISO standards regarding terms and language.

Volume III – Water and Plumbing Industry

Section A10: Water and Sewerage Infrastructure

10.1. Regulation of Water Industry Entities

10.1.1. Technical review of licence applications

- ESCOSA requires OTR Infrastructure to review any new water/wastewater service licence applications. The following were the licence application referrals to the OTR for the financial year 2024/2025. Application for a water retail licence variation from Select Utilities Pty. Ltd (Trading as Factor UTB) (Cape Jaffa).
- Application for a water retail licence variation from Barunga West Council

10.1.2. Safety, Reliability, Maintenance and Technical Management Plans (SRMTMPs)

The Technical Regulator reviewed and approved the following SRMTMPs during 2024-2025, See Figure A1 W1.

Figure A1 W 1: Numbers of SRMTMP Reviewed and Approved

- SRMTMP received and reviewed – 15
- Approved SRMTMPs based on annual audit review – 7

10.1.3. Water industry entity audits

During 2024-2025, a total of 12 audits of water industry entities (Table A1 W1) were undertaken to confirm compliance with their SRMTMP and to ensure the safe and reliable operation of the infrastructure. The retail services provided by the audited water industry entities are provided in Table A1 W1 Audit entities and services in 2024/2025.

Table A1 W 1: Audit entities and services in 2024/2025.

WIE	Services Provided		
Clare and Gilbert Valleys Council		Wastewater	Non-drinking water
SA Water	Drinking Water	Wastewater	Non-drinking water
District Council of Peterborough		Wastewater	
Robe District Council		Wastewater	
Kingston District Council		Wastewater	
Berri Barmera Council		Wastewater	
District Council of Loxton Waikerie		Wastewater	
City of Onkaparinga Sewerage Services		Wastewater	
City of Onkaparinga Water Services			Non-drinking water
Municipal Council of Roxby Downs	Drinking Water	Wastewater	
BHP Billiton Olympic Dam Corporation - Water	Drinking Water		
Copper Coast Council		Wastewater	

The number of audits undertaken per type of services are provided in Figure A1 W2

Figure A1 W 2: Numbers of audits undertaken per service

The licence type of water industry entities audited is included in Figure A1 W3.

Figure A1 W 3: Numbers of audits undertaken per types of licence

10.2. Industry Training

10.2.1. Brown Card Training for South Australia

In May 2022, the OTR launched the SA Brown Card training for water industry entities and water industry contractors in South Australia.

The course was developed by the Queensland Water Directorate and the Water Skills partnership to educate the importance of, and requirements for, maintaining public health, minimising environmental harm as well as general workplace health and safety when working around sewerage and recycled water assets.

The OTR coordinated a review of the original Brown Card in conjunction with other South Australian Government departments to modify the training to include South Australian regulatory requirements. The training is supported by the South Australian Government and is available at no charge to water industry employees and contractors working with wastewater and recycled water in South Australia.

The training takes approximately 90 minutes to complete and consists of information slides and a short quiz. Once the training is complete a “Brown Card” certificate of completion is issued to the participating person and is valid for three years. The SA Brown Card is a non-accredited course but a valuable learning resource for sewerage and recycled water workplace health and safety basics.

Information on how to sign up to the SA Brown Card can be found on the OTR webpage, under Water and sewerage infrastructure/SA Brown Card . There were 44 completions of the SA Brown Card training during 2024-2025.

Section A11: Plumbing Installations

11.1. Plumbing Compliance

11.1.1. Expiation Notices and Enforcement

The following compliance activities were undertaken between 1 July 2024 to 30 June 2025:

- 4,918 plumbing audits were conducted.
- 67 enforcement notices and one request for interview letters were issued for breaches of the Water Industry Act 2012.
- 20 Expiations Notices were issued of which five were non-compliant plumbing, 3 were for not making appropriate bookings for inspection and one for working without a valid license (was subsequently withdrawn).
- 176 compliance investigations were initiated.
- Eight plumbing interviews were conducted to discuss non-compliant plumbing installations.
- Nine plumbing induction interviews were conducted.
- Eight Re-Inspection fees were issued.
- 26 investigations were referred to Consumer and Business Services (CBS)
- 4 Freedom of Information (FOI) requests were processed.

The Office of the Technical Regulator (OTR) Plumbing Section initiates compliance investigations based on referrals from customers and stakeholders reporting suspected non-compliant plumbing work, as well as findings from routine and random audits of on-site plumbing installations. Audit outcomes are reviewed fortnightly, enabling the Technical Regulator to ensure all instances of non-compliance are rectified promptly. The OTR Plumbing Section collaborates actively with industry to maintain high technical and safety standards for all on-site plumbing installations in South Australia.

11.1.2. Plumbing Certificates of Compliance

For the period 1 July 2024 to 30 June 2025, 35,683 plumbing Certificates of Compliance were submitted to the Office of the Technical Regulator. This was 3500 more certificates of compliance than previous financial year. The numbers of eCoC submitted over the last 2 year are shown on Figure A1 W 4.

Figure A1 W 4: Plumbing Certificates of Compliance submitted over the last 2 years

11.2. Plumbing Audits

11.2.1. Plumbing Bookings and Audits

Plumbers must notify the Office of the Technical Regulator (OTR) each time on-site sanitary plumbing and drainage installations are connected to SA Water infrastructure. This important step ensures regulatory oversight of all works impacting the state's water and drainage infrastructure, with a continued focus on the safety and compliance of plumbing installations.

Random Audit Selection Process

Site audits are conducted randomly, with cases selected through the Electronic Certificate of Compliance (eCoC) 'Plumbbookings' case management system. This digital approach strengthens both transparency and the ability to accurately trace regulatory checks.

Audit Allocation Considerations

Audit assignments by the OTR are determined by several key factors:

- Booking type: The category of work being undertaken.
- Associated risk and public safety issues: Focus is given to installations involving in-ground drainage, backflow protection, and non-drinking water systems.
- Contractor case history: Past compliance records and audit outcomes are factored into future audit allocations.

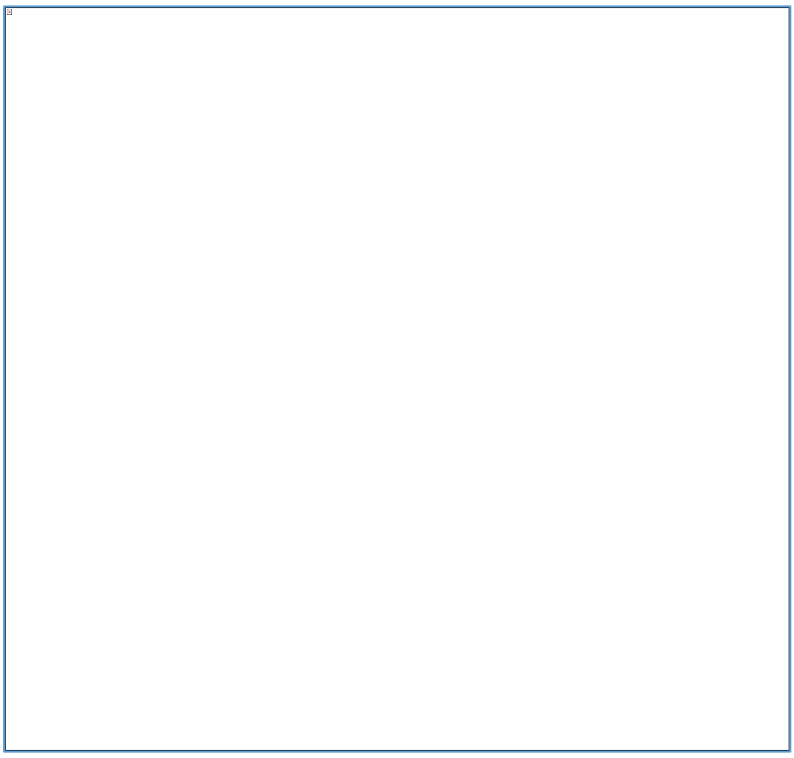
This process ensures that OTR oversight is risk-based and focused on works that have the greatest potential impact on public health and safety, while promoting accountability across the plumbing industry.

The Technical Regulator conducted a total of 4,918 on-site plumbing audits and 586 desktop hydraulic design audits in the 2024-25 financial year. On-site audit included 125 final audits on newly constructed residential and commercial developments. Final audits examine the entire components of the on-site plumbing installation. The break down of Audit for each category is demonstrated on Figure A1 W5 and Table A1 W2.

*Figure A1 W 5: On-site plumbing Audit for 2024 – 2025**

*Onsite audit numbers of Non drinking water included in section 1.3.2

Table A1 W 2: Onsite Plumbing Audit for 2024 - 2025



Plumbing and Drainage Compliance Overview

Plumbing and drainage installations in South Australia span a wide spectrum—from straightforward additions such as a residential en-suite toilet, to large-scale, technically demanding systems in commercial shopping centres, industrial facilities, and multi-storey complexes.

Every plumbing installation subjected to audit is rigorously assessed against the Plumbing Standard, as issued by the Technical Regulator under Section 66 of the *Water Industry Act* 2012 & Regulations. This Standard draws directly on relevant provisions of the Plumbing Code of Australia (PCA).

To ensure the health and safety of the community and uphold quality standards across the industry, all plumbing work must demonstrate compliance with the performance requirements of the PCA. This can be achieved through "deemed-to-satisfy" solutions outlined in the AS/NZS 3500 Plumbing and Drainage standards or, where appropriate, via approved Performance Solutions that satisfy the criteria of the PCA.

This robust regulatory framework ensures that plumbing installations, whether residential or commercial, consistently meet nationally recognised benchmarks for safety, reliability, and environmental responsibility.

11.2.2. Metropolitan and Regional Audits

The OTR undertake audits of plumbing installations in both the metropolitan and regional areas of South Australia (refer to Figure A1 W6: Metropolitan on-site plumbing installation audits for the 2024-25 financial year).

Figure A1 W 6: Metropolitan on-site plumbing installation audits for 2024-2025

The Technical Regulator has continued to maintain its regulatory presence in regional areas of South Australia via programmed audits of on-site plumbing. In the

2024-25 financial year 505 audits were conducted in regional areas of South Australia (refer to Figure A1 W7: Regional on-site plumbing installation audits for the 2024-25 financial year).

Figure A1 W 7: Regional on-site plumbing installation audits for 2024-2025

11.3. Fire Fighting and Non-drinking Water Services

The Technical Regulator engages with plumbing practitioners, hydraulic consultants, designers, and industry stakeholders to provide guidance on installations and hydraulic designs involving inground fire hydrant systems, as well as drinking and non-drinking water services

11.3.1. Fire Service Audits

During the 2024–25 financial year, the Office of the Technical Regulator (OTR) conducted a total of 221 audits of in-ground fire service installations. These were supported by reviews of Hydraulic Design Submissions provided by industry contractors and consulting engineers, which assisted in monitoring compliance across on-site fire and water service installations.

The primary objective of these audits is to ensure the protection of South Australia's drinking water supply by verifying that adequate cross-connection control measures are in place. As dedicated fire mains are not metered, the OTR also witnesses hydrostatic testing of fire services to prevent unnecessary loss of drinking water due to potential leakage.

While the OTR does not regulate conventional fire sprinkler systems, sample audits are undertaken where such systems are interconnected with a building's drinking

water pipework. These inspections are conducted to ensure the integrity and safety of the drinking water supply within the premises.

The Australian Building Codes Board has introduced a revised version of the FPAA101D automatic sprinkler system specification into National Construction Code Volume 3. This updated specification includes provisions for both conventional piping arrangements and a new combined piping configuration. The combined arrangement enables all plumbing fixtures and the sprinkler system to be supplied through a single reticulated plumbing installation.

To assess compliance with design and installation requirements, FPAA101D systems have been subjected to both desktop audits and on-site inspections. While adoption across the industry remains limited, the specification is expected to gain traction due to its potential to deliver cost savings when compared with traditional fire sprinkler systems.

During the 2024–25 financial year, the Office of the Technical Regulator conducted 4 audits of FPAA101D system installations.

11.3.2. Non-Drinking Water Services Audit

During the 2024-25 reporting period, Plumbing Installations Inspectors from the OTR conducted a total of 272 audits on non-drinking water systems. These audits were carried out across new residential developments, commercial properties, and municipal parks where dual water services comprising both drinking and non-drinking water had been installed.

The continued use of non-drinking water as the primary source for irrigation in municipal parks and gardens remains a consistent practice. Given the potential risks associated with cross-connections, these public spaces are routinely audited to verify the proper separation of water services and to ensure public health and safety is maintained. The monthly splits of the fire service and non-drinking water audit conducted by the OTR is demonstrated on Figure A1 W8.

Figure A1 W 8: Fire service and non-drinking water audits for 2024-2025

11.4. Cross-connection Control and Backflow Prevention

The Technical Regulator conducts audits of on-site plumbing water service installations to safeguard the drinking water network, to prevent consumers from contaminating their own on-site plumbing systems and prevent cross-connections and backflow incidents. Where required, testable backflow prevention devices are installed at residential, commercial, and industrial properties to stop contaminants from entering the property's water supply and the broader drinking water infrastructure.

Auditing and confirming the existence of appropriate cross connection control devices are in place for non-drinking water systems has been a focus topic. Although non-drinking water services are not fit for human consumption, it is still important that supply quality is maintained as its quality contributes towards the hazard level that it poses to the drinking water network. There has been an increase in the number of interconnections between drinking and non-drinking water services at recreational parks, gardens, and sporting facilities. These setups are often used to provide a backup water supply in case one source becomes temporarily unavailable. Due to the high risk posed to the drinking water network, these installations are subject to audits to ensure appropriate cross-connection control measures are in place. If backflow prevention devices are not correctly installed, contaminants may enter the drinking water system.

The Office of the Technical Regulator (OTR) investigates reports of reverse water flow through drinking or non-drinking water meters operated by network utility providers. Where backflow prevention is missing or outdated, the OTR enforces the

installation or upgrade of appropriate devices in accordance with the *Water Industry Act* 2012.

The Technical Regulator also continues to monitor backflow prevention devices installed within on-site plumbing systems. Under Section 69 of the *Water Industry Act* 2012, property owners are responsible for maintaining equipment located on the customer's side of the connection point.

11.5. Industry Information and Training

The OTR remains committed to supporting the plumbing industry by sharing key updates on regulatory developments. These include changes to the National Construction Code Volume 3 (Plumbing Code of Australia) and the AS/NZS 3500 Plumbing and Drainage series. The OTR also provides guidance on procedural and administrative matters, helping ensure the industry clearly understands its obligations under the Act when designing and installing plumbing and drainage systems.

The OTR are members of the WS-023 technical committee relating to backflow prevention standards and were the project lead for the revision of Australian standard AS 2845.2:2010. This standard was successfully revised and published following industry stakeholder consultation via the Standards Australia WS-023 working group in mid-2025. The OTR also submitted a proposal to Standards Australia for the inception of a new Australian standard specific to verifying the presence of a suitable backflow prevention device integral to a plumbing fixture or appliance as applicable. This new standard proposal was accepted by Standards Australia following industry consultation.

Seminars and information sessions are delivered both in person and online via webinars. The Technical Regulator chairs the Water Industry Technical Advisory Committee (WITAC) and is also represented on the Plumbing Codes Committee (PCC) and the Plumbing Industry Reference Group (PIRG). Key information is shared through Plumbing Advisory Notes (PAN), contributions to the OTR's Regulation Round Up newsletter and articles published in the Master Plumbers Association magazine. These seminars and sessions serve as a valuable platform for engaging with the plumbing industry, offering opportunities to provide feedback and address regulatory and technical concerns.

During 2024–25, the Office of the Technical Regulator (OTR), in collaboration with the Master Plumbers Association of SA Inc., hosted plumbing industry Roadshows across various regional and metropolitan locations including Port Lincoln, Port Augusta, Port Pirie, Wallaroo, Noarlunga, Mount Gambier, Port Adeliade, Murray Bridge, Tonsley, Modbury, Gawler, and Berri.

In addition, the OTR conducted information sessions with plumbing students from TAFE and PEER, focusing on Fire Hydrant Services, Non-Drinking Water systems, and Backflow Prevention installations. Guidance was also provided to local council

environmental health officers through webinars hosted by the Local Government Association and in-person meetings at council offices.

Throughout the 2024–25 financial year, the OTR delivered plumbing presentations at several plumbing firms (refer to Figure A1 W 9). Larger companies are encouraged to invite the Technical Regulator to discuss updates to the National Construction Code and address common challenges faced by contractors. The OTR also attends quarterly at meetings of the South Australian Hydraulic Consultants Association.

This year, practitioners received updates on standards and changes to the Planning Code, along with insights into common issues observed by inspectors during routine operations. Key topics covered included:

- Plumbing Code of Australia 2025
- Heated water temperature delivery control updates
- Water heater requirements
- Firefighting water service testing
- Audit common non-compliances

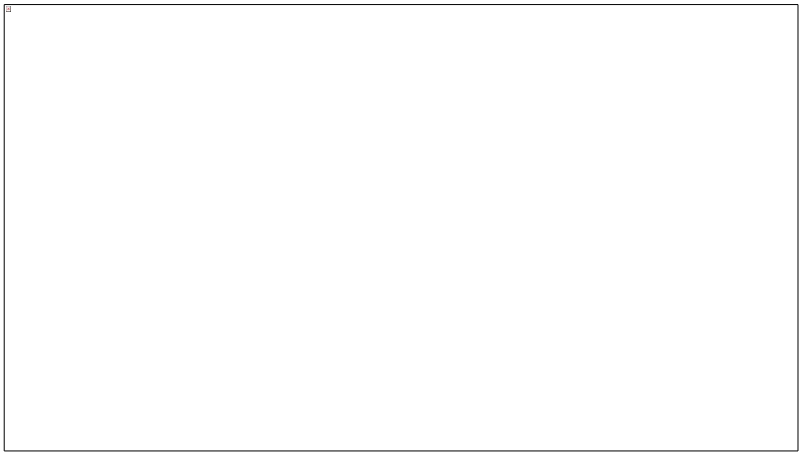


Figure A1 W 9: 2025 Roadshow Seminar Topics

11.6. Property Interest Reporting and Data Management

11.6.1. Property Interest Reports

Property Interest Report (PIR) responses are initiated when a vendor (such as a conveyancer or property owner) submits a Form 1 Vendors Statement through the Land Titles Office. If the OTR has a registered interest in the property listed on the Form 1 Vendors Statement, the OTR will respond with details of the interest. The OTR holds an interest in properties that have been identified to have non-compliant plumbing work or backflow prevention device maintenance requirements. This process is typically initiated when a property is being prepared for sale or transfer.

The Technical Regulator processed a total of 1697 PIR requests for the 2024-25 financial year which has stabilised following the 27% increase in the 2023-24 financial year.

Figure A1 W10 provides the monthly breakdown of PIR requests for the 2024-25 financial year.

Figure A1 W 10: PIR monthly statistics for 2024-2025

11.6.2. Data Management

The OTR remains committed to continuously refining and enhancing the procedures currently in place to minimise the number of unnecessary PIR submissions. As part of this effort, we have implemented routine and systemic cleansing of the database and associated interest records. This ongoing maintenance is designed to ensure that data remains accurate and relevant.

These refinements contribute to maintaining the volume of incoming requests at a level that is both practical and manageable and causes the least amount of disruption to stakeholders.

Over the past several years, the data cleansing initiatives we have introduced have played a vital role in supporting timely responses to requests, even during periods of high demand. By proactively managing and streamlining the information we hold, we have been able to mitigate delays and uphold service standards.

Feedback from stakeholders has consistently indicated that these measures are valued and well received, with many expressing appreciations for the improved clarity and responsiveness from the OTR.

Section A12: Plumbing Products

12.1. Plumbing Products certified under the WaterMark Certification Scheme

The National Construction Code Volume Three – The Plumbing Code of Australia (PCA) sets out the performance requirements and deemed-to-satisfy-solutions for the design and construction of plumbing and drainage systems. The PCA also sets out the requirements for plumbing products used in the construction of a plumbing and drainage installation. Plumbing products are certified and authorised through the application of the WaterMark Certification Scheme.

The Australian Building Codes Board (ABCB) manage the WaterMark Certification Scheme (the Scheme), with the Plumbing Code Committee (PCC) which includes State/Territory government and industry representatives) helping in the administration of the Scheme. It is important to note that not all plumbing and drainage products require WaterMark certification and authorisation. All products proposed to be used in plumbing and drainage installations require a risk assessment to be undertaken, with products that have been identified through the risk assessment process as requiring WaterMark Certification listed in the Schedule of Products (WMSP). Products that are low risk and not required to be WaterMarked are listed on the Schedule of Excluded Products (WMEP).

The Scheme's objective is to deliver plumbing and drainage products that are safe and fit for their intended use within building developments, in an environment that is increasingly challenged by reduced enforcement resources, increased product non-conformity and an ever-expanding global market. The Office of the Technical Regulator (OTR) represents South Australia on plumbing product certification matters.

The ABCB in conjunction with WaterMark has implemented the requirement to use lead-free products which will be introduced in 2026. This work has been done with other state/territory regulators that sit on the PCC.

South Australia as a member of the PCC assists the ABCB in the development and revision of WaterMark technical specifications and Standards for the plumbing products. The OTR also ensures that WaterMark certified plumbing products installed in South Australia are meeting the requirements of the WaterMark scheme.

Section A13: Regulatory Coordination

13.1. Regulatory Reform - Plumbing Code and Technical Standards

13.1.1. Revision of the Plumbing Code of Australia

The Australian Building Codes Board (ABCB) has two primary technical advisory committees, the Building Codes Committee (BCC) and the Plumbing Code Committee (PCC). These Committees provide advice to the Board to deliver its work program by providing a national forum for regulatory authorities and industry to consider technical matters relevant to building and plumbing regulation reform.

The Office of the Technical Regulator represents South Australia on the PCC.

Examples of recent and current work projects undertaken by the PCC include:

- Review of the 2022 National Construction Code.
- Undertaking research and development projects to provide valuable information and input into the development of the Plumbing Code of Australia (PCA). Recent research projects have included Sanitary plumbing and drainage pipe sizing and a project to verify hazard ratings for cross-connection control devices.

Note: The Technical Regulator reviewed the South Australian variations and additions to the National Construction Code 2022.

13.1.2. Plumbing and Drainage Standards projects

Standards Australia is a standards organisation recognised through a Memorandum of Understanding with the Australian Government as the peak non-government Standards development body in Australia.

The Office of the Technical Regulator represents South Australia on several working sub committees that review the AS/NZS 3500 Plumbing and Drainage standard series. The Office of the Technical Regulator participates on these sub committees though our involvement with the Australian Building Codes Board who act as a conduit between state plumbing regulators and the WS14 Committee.

Some of the recent plumbing and drainage projects the Office of the Technical Regulator have been involved in, includes:

- Sanitary drainage pipe sizing
- Backflow requirements for Atmospheric Vacuum Breakers
- Rainwater installation requirements.

We are also directly involved with AS2845 series which is the standard for backflow devices both design and testing. The WS23 committee is currently in the process of reviewing AS2845.1 Mechanical Backflow prevention devices materials, design, and performance requirements.

13.1.3. Dual Reticulation Infrastructure Standard

The Technical Regulator has published the Standard for Dual Reticulation Infrastructure (266.6 KB PDF). It prescribes the minimum requirements and responsibilities of all parties involved in dual reticulation infrastructure to ensure the safety and reliability of the water services provided to South Australian consumers.

The Standard has been published after extensive consultation with stakeholders from the South Australian water industry.

The intent is not for legacy assets to be updated, but that going forward, the design, installation and construction of dual reticulation infrastructure including — up to the point of connection to a property — will be in accordance with the Standard.

13.1.4. Infrastructure Standard

This Standard is in addition to requirements set out in the Water Services Association of Australia (WSAA) codes.

The Technical Regulator has published an Infrastructure Standard which adopts the Water Services Association of Australia (WSAA) codes as the principle minimum Standard for water and sewerage infrastructure.

The intent is not for legacy assets to be updated, but that going forward, WSAA codes, supplementary notices and supporting documents which are equivalent to or exceed WSAA requirements shall be used for any design, installation, inspection, alteration, repair, maintenance, removal, disconnection or decommissioning of water and sewerage infrastructure.

The WSAA codes complement standards, codes and guidelines for water/wastewater reticulation in current legislation – a copy is available for viewing at the Office of the Technical Regulator.

By recognising the WSAA codes as the Infrastructure Standard, the Office of the Technical Regulator acknowledges that the WSAA codes have gone through a peer-review process and are widely accepted for the requirements of water and sewerage infrastructure.

If utilities produce supplementary notices and supporting documents which are equivalent to or exceed WSAA requirements, these will be recognised as suitable as part of the Infrastructure Standard.

13.2. Water Industry Technical Advisory Committee (WITAC)

For the period from 1 July 2024 to 30 June 2025, two technical advisory meetings were held on 10th December 2024 and 16th of June 2025. Topics covered at the meetings included:

- SRMTMP audits
- Updated SRMTMP Guidance document
- Non-drinking Water Guideline consultation
- Proposed review and update of the Infrastructure Standard and the Standard for Dual Reticulation Infrastructure
- Community Wastewater Management System (CWMS) risk workshop held in May 2025

- Proposed free short course offerings for SA as per the renewed contract with qldwater – Trility Chemistry, Trility Calculations and SCADA
- Infrastructure Standard and the Standard for Dual Reticulation Infrastructure currently being reviewed
- National Performance Reporting update
    - The announcement on introduction of SWIM system for annual water entity reporting went out in January 2025
    - Permanent NPR Coordinator role established within OTR Water and Sewerage Infrastructure Team
    - SWIM system training held on 8th and 9th May, with four sessions over two days with 49 people in total attendance from 28 water industry entities
    - NPR 2023-24 Part A was published in March 2025 and is available on the Bureau of Meteorology's website along with the Part B dataset.
    - Reporting for the 2024-25 NPR opens on the 1 July 2025

Volume IV – Key Performance Indicators

ElectraNet Key Performance Indicators

Table K 1: ElectraNet Key Performance Indicators

Performance Indicator	Performance Measured	Definition of Indicator	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Substation Routine Task Rate	Volume of planned substation maintenance	Number of Substation Routine Tasks completed	5,668	6,396	6,544	7,796	9,682
Line Routine Task Rate	Planned line maintenance during the period	Number of Line Routine Tasks completed during the reporting period	1,889	839	2,701	5,411	5,934
Substation Corrective Task Rate	Unplanned Substation maintenance during the period	Number of Substation Corrective Tasks completed during the reporting period	6,079	6,528	5,482	8,660	11,091
Line Corrective Task Rate	Unplanned Line maintenance during the period	Number of Line Corrective Tasks completed during the reporting period	8,609	6,120	7,488	8,313	11,031
Vegetation Infringements	Vegetation maintenance	Number of reported vegetation infringements unresolved within 7 days during the fire season	0	0	0	0	0
Fire Starts	Line maintenance	Number of fire starts caused by ElectraNet transmission assets.	3	2	0	4	1
Major Plant Failure Events	Events reported under 73(3)(a) of *the Electricity (General) Regulations 2012*	Number of failures of major plant requiring replacement (e.g. HV transformers, circuit breakers, disconnectors, instrument transformers	5	7	10	9	7
Electric Shock Reports	Safety	Number of shock reports	0	0	0	1	0
Switching Incident Rate	Switching safety	Number of switching incidents per number of switching plans issued	0.40%	0.37%	0.54%	0.29%	0.35%

Lost Time Injuries	Safety	Number of injuries resulting in more than one day lost	0	0	0	1	1
Lost Time Injury Frequency Rate	Safety	Number of injuries resulting in more than one day lost per million hours worked	0	0	0	1.27	0.64
Medical Treatment Injuries	Safety	Number of medical treatment injuries	0	0	0	1	4
Medical Treatment Injury Frequency Rate	Safety	Number of medical treatment injuries per million hours worked	0	0	0	1.27	2.56
Contractor Safety Incidents involving Injury	ElectraNet's contractor safety	Number of reported construction and maintenance contractor safety incidents involving injury	8 (0 LTI & 8 MTI)	7 (0 LTI & 7 MTI)	10 (1 LTI & 9 MTI)	7 (1 LTI & 6 MTI)	3 (1 LTI & 2 MTI)
Emergency Management Plan Exercises	ElectraNet's emergency response preparedness	Number of completed Emergency Management Plan exercises	5	4	2	8	10

SA Power Networks Key Performance Indicators

Table K 2: SA Power Networks Key Performance Indicators

Safety Management Indicators	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Annual cumulative numbers of lost time accidents involving SA Power Networks personnel (including contractors)	15 Lost Time	4 Lost Time	8 Lost Time	14 Lost Time	23 Lost Time
Annual cumulative numbers of near misses involving SA Power Networks personnel (including contractors)	1,186 Near Miss	1,012 Near Miss	926 Near Miss	915 Near Miss	837 Near Miss
Number of in progress hazard logs	100	221	94	57	103
Hazard logs greater than 30 days old	67	46	43	49	71
Actual workplace inspections carried out per annual inspections planned[1]	N/A[2]	4,938/5,827	5,012/5,368	7,587/7,681	8239/8521
Number of shock reports per 1,000 km of mains	7.7	8.3	7.6	9.0	10.0
Number of damage claims per 1,000 km of mains	2.4	1.5	1.6	3.0	1.0
Number of fire starts per 1,000 km of mains	0.6	0.4	0.6	0.4	1.0
Number of switching incidents	24	22	13	14	10
Number of completed emergency plan exercises	5	4	4	4	4
Percentage of meters within tolerance (per planned sample)	88.3%	90.5%	94.3%	91.7%	N/A[2]
Number of requests for underground locations provided per year	113,485	118,461	127,794	145,743	159,635
Number of revenue metering investigations carried out per year	1,451	1,359	1,188	1,234	1,151
Audited compliance against internal vegetation clearance procedures and agreements	Completed by GHD in November 2020	Completed by GHD in November 2021	Completed by GHD in November 2022	Completed by GHD in November 2023	Completed by GHD in November 2024 and May 2025

Note 1: Estimate only by SA Power Networks.

Note 2: No planned meter maintenance or meter sample testing was undertaken during the period as approved by AEMO.

AGN's Key performance indicator

Table K 3: APA Group's Key Performance Indicators

Key Performance Indicators (KPIs) for the distribution networks, as supplied by Australian Gas Networks (AGN), owner of the gas distribution networks in South Australia, and the APA Group, operator of these networks, are as follows:

KPI Section	Aspects measured
1. Safety	Network and public safety
2. Measurement	Accuracy and reliability of gas metering and measurement of gas heating value
3. Quality	Natural gas quality
4. Reliability	Reliability of gas supply and equipment
5. Connections	Safety and soundness of customer connections to the pipeline network

Key Performance Indicator	2021-2022	2022-2023	2023-2024	2024-2025
1. Safety				
1.1. The maintenance of continuous, reliable gas supply				
Number of complaints of poor supply pressure	11	2	1	10
Number of gas outages (>5 consumers affected)	12	23	38	25
1.2. Instances of third-party damage				
Number of damages to the mains and services, caused by third parties	475	434	498	483
Number of BYDA locations provided to third parties	94,602	99,902	108,620	119,807
1.3. Dealing with potential accidents or unsafe situations				
Emergency plan exercises	2	2	4	3
Number of evacuations directly attributed to a gas leak from mains or inlet services	1	0	4	0
Number of instances where a gas leak from a network enters a building	6	4	5	6
Number of fires or explosions caused by a gas leak from a network	0	0	0	1
2. Measurement				
2.1. Extent to which meters are being changed over (Gas Measurement Management Plan)				

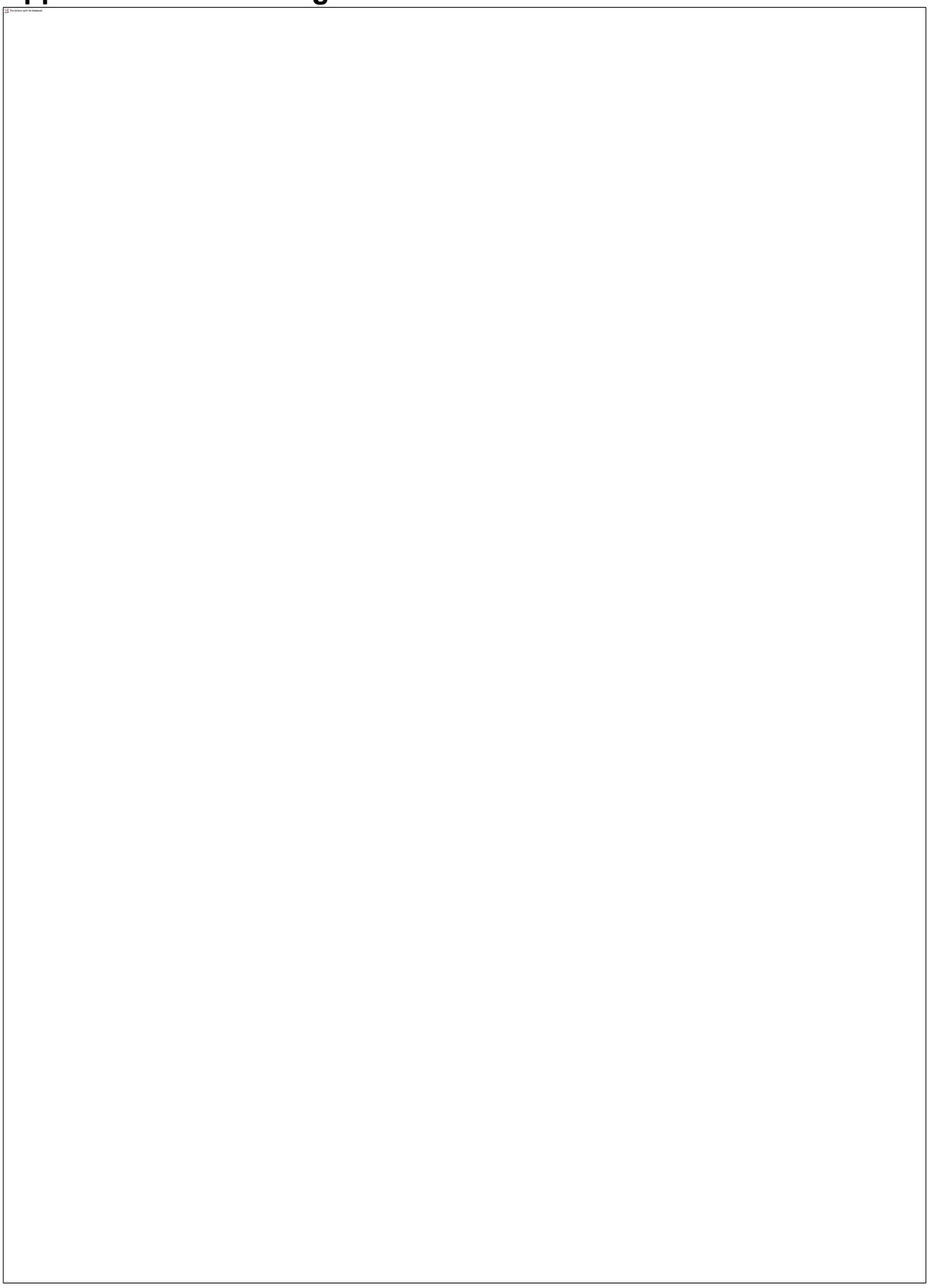
Number of meters changed: **Domestic** **Industrial/commercial**	 17,627 646	 15,200 556	 10,820 386	 13,068 427
Number of overdue meters with: **10 years' life** **15 years' life**	 405 117	 433 122	 1,029 137	 3069 2315
3. Gas Quality				
3.1. The quantity of gas entering the Distribution System				
Total gas entering the Distribution System (including farm taps) (TJ)	31,432	30,437	27,724	26,330
3.2. The maintenance of continuous, reliable gas supply				
Number of poor combustion/poor pressure incidents reported	11	2	1	10
Number of excursions exceeding one-fifth of the Lower Explosive Limit (LEL)	9	2	3	6
Number of excursions below 7 mg/m^3 total odorant	23	22	19	16
Total number of excursions from the gas quality requirements, as specified in AS 4564	0	0	0	0
4. Reliability				
4.1. Description and specification of Distribution System and its components				
Length of distribution system (km)	8,529	8,621	8,664	8,755
4.2. Mains replacement program[2]				
Total Length of mains replaced (km)	152.9	178.41	151.4	144.7
LP Block (South Australia)	118.8	137.25	92.1	97.3
HDPE 'old generation' – all SA areas (includes HDPE 575 & HDPE Class 250)	33.6	41	59.3	47.4
CI/UPS – Reactive condition based replacement	0.34	0	2.3	0
HDPE – Reactive condition based replacement	0.11	0.16	0.21	0.9
4.3. Total amount of UAFG lost from the Distribution System as a result of leakage or an activity referred to in Section 82(1) of the *Gas Act 1997*				
Total UAFG (TJ) (Based on AEMO data as at 30 June of each year)	392	312	233	73
4.4. The extent to which the public are reporting gas leaks – mains and inlets services				
Number of public reports of leaks (mains and services, excluding third party damages)	1,545	1,149	1,038	923

Percentage of publicly reported gas leaks where gas leak was found	80%	86%	86%	85%
Number of leaks detected by Leakage Surveys (per km of surveyed mains)	0.15	0.10	0.03	0.01
4.5. Extent of Training				
Percentage of refresher training compliance to scheduled volumes	92%	92.6%	98%	99%
5. Connections				
5.1. Extent of access to system as required by return				
Number of consumer connections (at 30 June each year)	472,485	480,880	483,528	489,917
Number of new connections completed	7,433	7,371	8,401	8,882

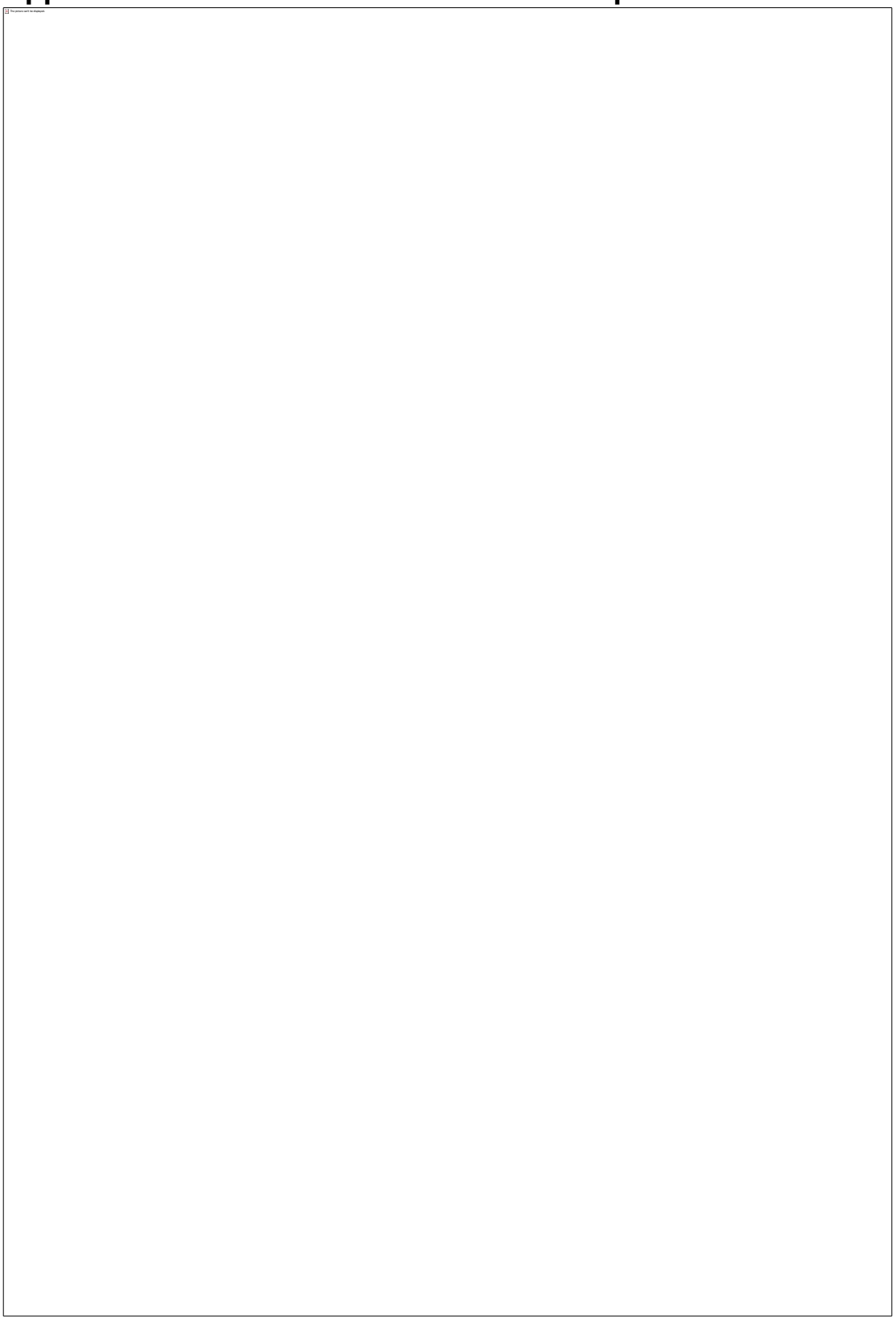
Customer number for each of AGN's networks.

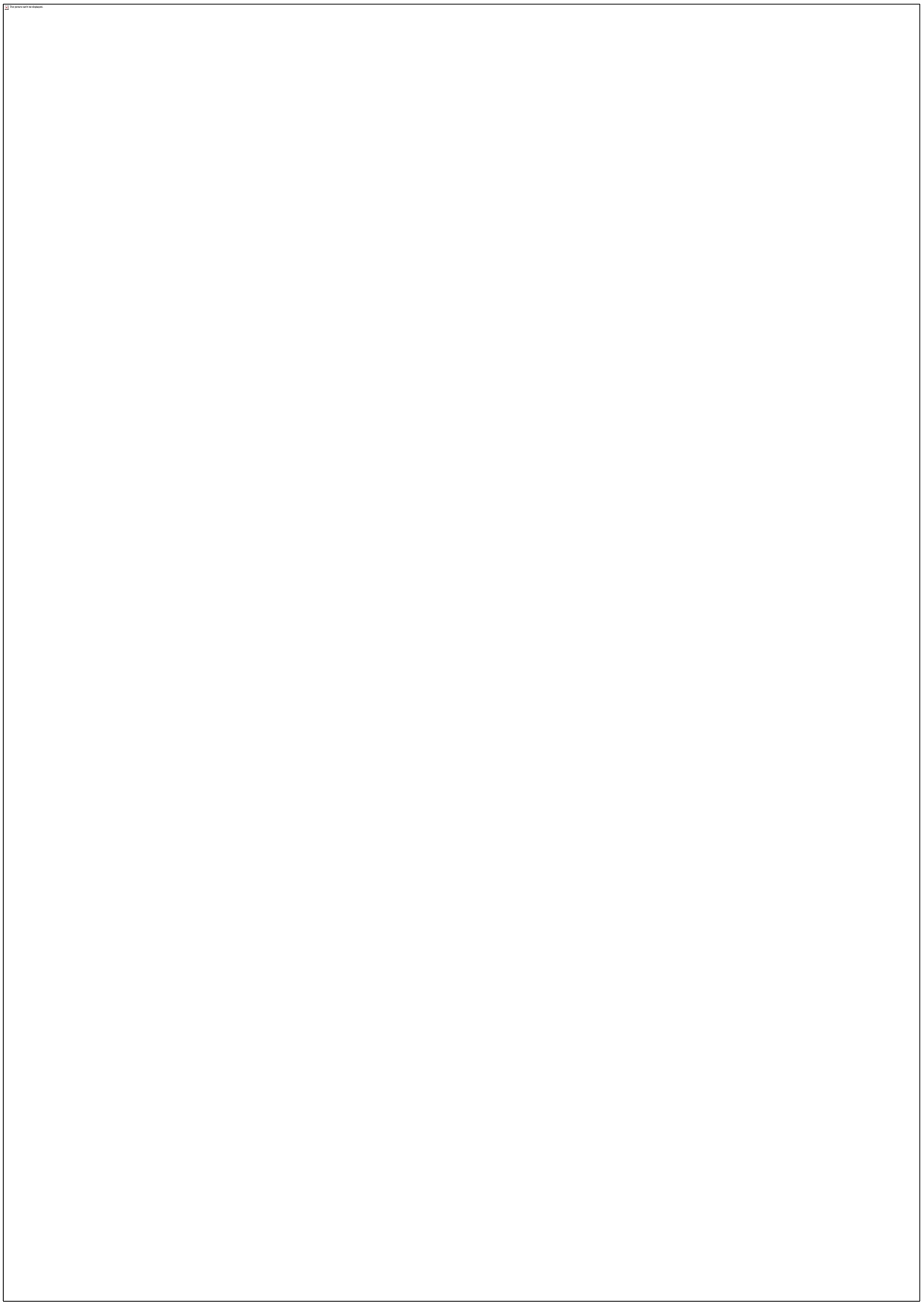
Network location (customers as of)	**30/6/22**	**30/6/23**	**30/6/24**	**30/6/25**
Metropolitan (including Virginia, Waterloo Corner & Two Wells)	449,480	454,456	456,669	462,553
Mount Gambier	9,413	9,521	9,620	9,680
Port Pirie	5,479	5,501	5,501	5,513
Whyalla	4,222	4,227	4,231	4,230
Nuriootpa	1,301	1,352	1,392	1,450
Murray Bridge	494	527	573	658
Freeling	376	387	508	659
Angaston	388	397	417	425
Tanunda	322	339	365	390
Berri & lateral	108	117	119	120
Peterborough	77	79	79	78
Reeves Plains	1	1	1	1
Snuggery	1	1	1	1
Tonsley Innovation District/ Mitchell Park (Renewable Gas Blend)	722	3,832	3,881	3,924
Mount Barker (LPG)	101	143	171	235
Total	**472,485**	**480,880**	**483,528**	**489,917**

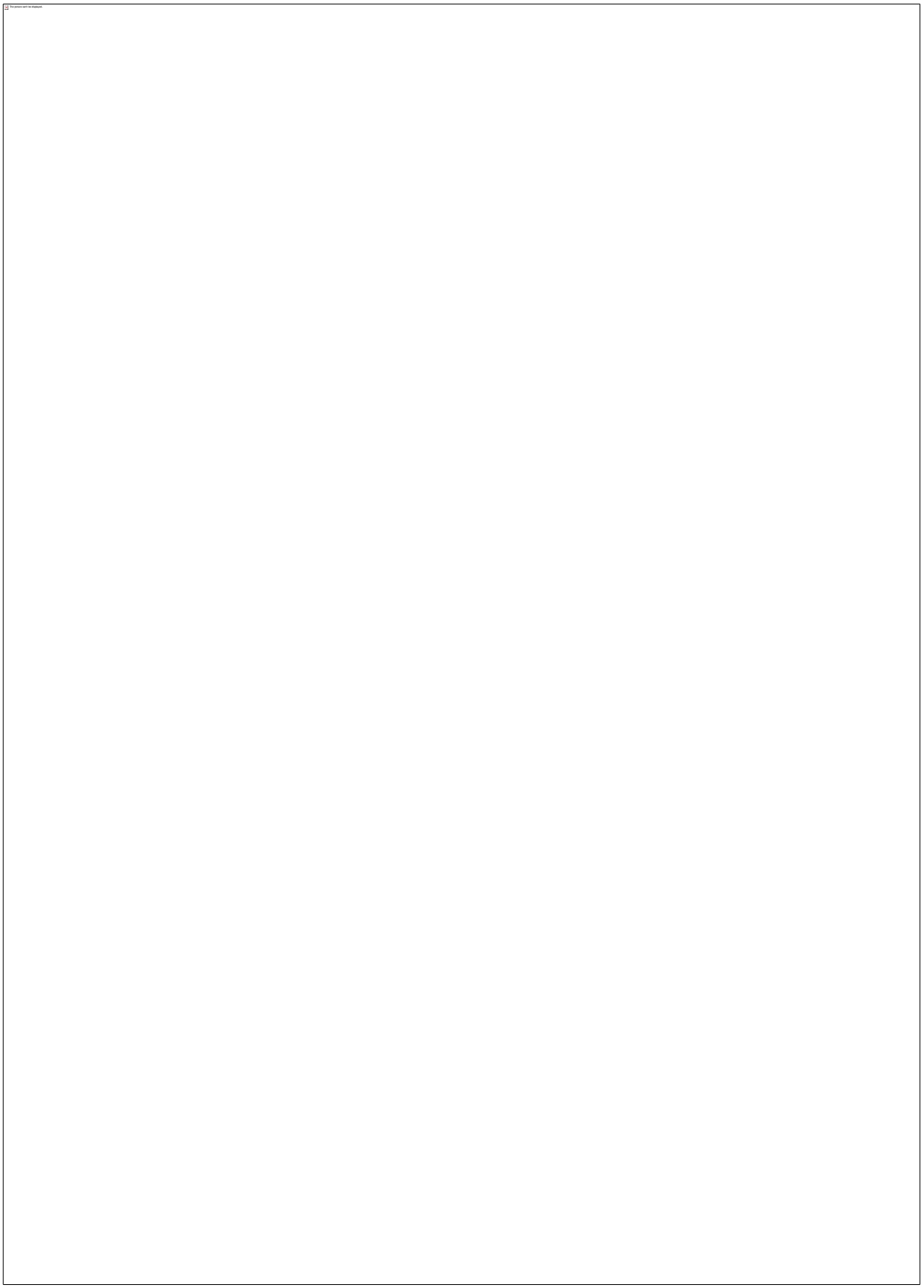
Appendix 2: OTR Background



Appendix 3: Electronic Certificates of Compliance Form




This picture won't be displayed.


This picture can't be displayed.

Appendix 4: Plumbing Code within the regulatory framework

Appendix 5: Water Industry Entities and licences

Licensee	Licence category	Drinking water	Non-drinking water	Sewerage
Adelaide Hills Berry Farms Pty Ltd	Minor	No	Yes	No
Adelaide Hills Council	Intermediate	No	No	Yes
Adelaide Plains Council	Minor	No	No	Yes
Alano Utilities Pty Ltd	Intermediate	No	No	Yes
Alexandrina Council	Intermediate	No	Yes	Yes
Berri Barmera Council	Intermediate	No	Yes	Yes
BHP Billiton Olympic Dam Corporation Pty Ltd	Minor	Yes	No	No
City of Onkaparinga - sewerage	Intermediate	No	No	Yes
City of Onkaparinga - water	Minor	No	Yes	No
City of Port Adelaide Enfield	Minor	No	Yes	Yes
City of Port Lincoln	Minor	No	Yes	No
City of Salisbury	Intermediate	No	Yes	No
City of Tea Tree Gully	Minor	No	Yes	No
City of Playford	Minor	No	Yes	No
Clare & Gilbert Valleys Council	Intermediate	No	Yes	Yes
Coorong District Council	Intermediate	No	Yes	Yes
Copper Coast Council	Intermediate	No	No	Yes
CPE Tonsley Pty Ltd	Intermediate	No	Yes	No
District Council of Barunga West	Intermediate	No	No	Yes
District Council of Ceduna	Intermediate	Yes	Yes	Yes
District Council of Cleve - Arno Bay	Minor	No	No	Yes

Licensee	Licence category	Drinking water	Non-drinking water	Sewerage
District Council of Cleve - Cleve	Minor	No	No	Yes
District Council of Coober Pedy	Intermediate	Yes	No	Yes
District Council of Elliston	Minor	Yes	Yes	Yes
District Council of Franklin Harbour	Intermediate	Yes	No	Yes
District Council of Grant	Intermediate	No	No	Yes
District Council of Karoonda East Murray	Minor	No	No	Yes
District Council of Kimba	Minor	No	Yes	Yes
District Council of Lower Eyre Peninsula	Intermediate	No	No	Yes
District Council of Mount Barker	Intermediate	No	Yes	Yes
District Council of Mount Remarkable	Intermediate	Yes	No	Yes
District Council of Orroroo Carrieton	Minor	No	Yes	Yes
District Council of Peterborough	Minor	No	No	Yes
District Council of Robe	Intermediate	No	No	Yes
District Council of Streaky Bay	Intermediate	No	No	Yes
District Council of Tumby Bay	Intermediate	No	Yes	Yes
District Council of Loxton Waikerie	Intermediate	No	No	Yes
ERA Water	Minor	No	Yes	No
F.B. Pipeline Pty Ltd	Minor	Yes	No	No
Fairmont Utilities Pty Ltd	Intermediate	Yes	Yes	Yes
Flinders Ranges Council - Hawker	Minor	No	No	Yes

Licensee	Licence category	Drinking water	Non-drinking water	Sewerage
Flinders Ranges Council - Quorn	Minor	No	No	Yes
Kangaroo Island Council	Intermediate	No	No	Yes
Kingston District Council	Intermediate	No	No	Yes
Light Regional Council	Intermediate	No	Yes	Yes
Lightsview Re-Water Supply Co Pty Ltd	Intermediate	No	Yes	No
Michell Infrastructure Pty Ltd	Minor	No	Yes	No
Mid Murray Council	Intermediate	No	Yes	Yes
Monarto Water Network Ltd	Minor	No	Yes	No
Municipal Council of Roxby Downs	Intermediate	Yes	No	Yes
Naracoorte Lucindale Council	Minor	No	No	Yes
Northern Areas Council	Intermediate	No	Yes	Yes
NWIC Pty Ltd	Intermediate	No	Yes	No
Port Augusta City Council	Intermediate	No	Yes	Yes
Port Pirie Regional Council	Intermediate	No	No	Yes
Regional Council of Goyder – Burra	Minor	No	No	Yes
Regional Council of Goyder – Eudunda	Minor	No	No	Yes
Renmark Paringa Council	Intermediate	No	No	Yes
Robusto Investments Pty Ltd	Minor	Yes	No	No
Rural City of Murray Bridge	Minor	Yes	Yes	Yes
South Australian Water Corporation (SA Water)	Major	Yes	Yes	Yes

Licensee	Licence category	Drinking water	Non-drinking water	Sewerage
Southern Mallee District Council	Intermediate	No	Yes	Yes
Tatiara District Council	Intermediate	No	Yes	Yes
The Barossa Council	Intermediate	No	Yes	Yes
The City of Charles Sturt	Intermediate	No	Yes	No
The Corporation of the City of Marion	Minor	No	Yes	No
The Corporation of the City of Whyalla	Minor	Yes	Yes	No
Wakefield Regional Council	Intermediate	No	No	Yes
Wattle Range Council	Intermediate	No	No	Yes
Wudinna District Council	Minor	No	Yes	Yes
Yorke Peninsula Council	Intermediate	Yes	No	Yes
Select Utilities Pty Ltd (Trading as Factor UTB)	Intermediate	No	No	Yes

Appendix 6: Glossary and Abbreviations

ABCB	Australian Building Codes Board
AC	Alternating Current
ACCC	Australian Competition and Consumer Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AGA	Australian Gas Association – this is a gas appliance certification body (CAB) proclaimed by the Governor
AGN	Australian Gas Networks Limited (formerly known as Envestra Limited) – the entity holding a gas distribution licence in South Australia
AHSCA	Association of Hydraulic Services Consultants Australia (South Australia)
AMP	Asset Management Plan
APA Group	Australian Pipeline Group and other associated entities
AS	Australian Standard
AS/NZS	Australian or Joint Australian/New Zealand Standards
AWA	Australian Water Association
BBQ	Barbecue
BCA	Building Code of Australia
BCC	Building Codes Committee
BOM	Bureau of Meteorology
CAB	Conformity Assessment Body
CBD	Central Business District
CBS	Consumer Business Services – The licensing authority in SA
CCASA	Caravan and Camping Association of South Australia
CFS	Country Fire Service
CI	Cast Iron
CO	Carbon Monoxide
CoC	Certificate of Compliance
CWMS	Community Wastewater Management Scheme
DC	Direct Current
Deemed-to-Satisfy provisions	The Deemed-to-Satisfy provisions are an optional means of achieving compliance with the mandatory Performance Requirements
BYDA	Before You Dig Australia (BYDA) is the leading voice for utility damage prevention in Australia. Home | Before You Dig Australia (BYDA)
DHW	Department for Health and Wellbeing
DIT	Department for Infrastructure and Transport

eCoC	Electronic Certificate of Compliance
ElectraNet	Short form of ElectraNet SA, the trading name of ElectraNet Pty Limited
EMPIA	Electronic Management of Plumbing Inspections and Audits
EPA	Environment Protection Authority
Equipment	Includes – (a) Pipes, fittings and apparatus; and (b) Any component of any equipment
ERAC	Electrical Regulatory Authorities Council
ESISC	Energy Supply Industry Safety Committee
ESCOSA	Essential Services Commission of South Australia
ETSA	Short form of Electricity Trust of South Australia Utilities (Now known as SA Power Networks)
EWOSA	Energy and Water Ombudsman South Australia
FIA	Fire Industry Association
Global Mark	A gas appliance certification body (CAB) proclaimed by the Governor
GMMP	Gas Measurement Management Plan
GTRC	Gas Technical Regulators Committee
HDPE	High Density Polyethylene
HIA	Housing Industry Association
HV	High voltage
IAPMO	International Association of Plumbing and Mechanical Officers – a gas appliance certification body (CAB) proclaimed by the Governor
IEEE	The Institute of Electrical and Electronics Engineers
IGA	Inter Government Agreement
Incident	Described in the *Gas Regulations 2012* as an 'accident'; an event causing death, injury or property damage; a gas related incident is when natural gas or LPG or their products of combustion is (or is suspected of being) directly involved
In-house	Testing performed by the operator, using their own facilities, such as meter testing performed at the laboratory of the APA Group depot
In-testing	Removal of a meter from service and test in a laboratory; if the meter is found to be satisfactory, it can be made available for re-use (if not, it will be repaired or scrapped)
kPa	Kilo Pascal (1,000 Pascals) – unit of pressure
KPI	Key Performance Indicator
LED	Light Emitting Diode
LGA	Local Government Association
LMP	Leakage Management Plan
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas

LSG	Land Services Group
LV	Low voltage (less than 1,000 volts; nominally 400/230 volts)
MAP	Moomba-Adelaide Pipeline – Gas pipeline that supplies natural gas to Adelaide from the Moomba processing plant
MBA	Master Builders Association
MED	Major Event Day
MEPS	Minimum Energy Performance Standards
MFS	Metropolitan Fire Service
ML	Mega Litre
MPA	Master Plumbers Association
MRA	Mutual Recognition Agreement or Act allowing legal recognition in one jurisdiction of product approval or testing procedures in another jurisdiction
NATA	National Association of Testing Authorities
NCC	National Construction Code
NEM	National Electricity Market
NERL	National Energy Retail Law
NGERAC	National Gas Emergency Response Advisory Committee
OTR	Office of the Technical Regulator
PCA	Plumbing Code of Australia
PCA pipeline	Port Campbell to Adelaide Pipeline
PCC	Plumbing Code Committee
PIR	Property interest reports
Plumbing	a. Water plumbing work, sanitary plumbing work or draining work on the Customer's side of any connection point. b. Any other work brought within the ambit of this definition by the regulations;
POL connection	'POL' is a type of valve for LPG cylinders and the most common type in Australia. The 'POL' is an acronym for the company that first produced the valves, Prest-O-Lite.
PTAC	Plumbing Technical Advisory Committee
QSN link	Queensland, South Australia and New South Wales link – pipeline from South West Queensland to the Moomba gas plant in SA
RCM	Regulatory Compliance Mark
RDNS	Royal District Nursing Society
Regulation Roundup	Bi-annual newsletter of the Technical Regulator to the gas, electrical and plumbing industry
RIS	Regulatory Impact Statement
Roadshow	Technical presentation by the Technical Regulator to gas fitters, provided free of charge annually in Adelaide city and regional centres
RVMAA	Recreational Vehicle Manufacturers Association Australia

SA	South Australia
SA Water	South Australian Water Corporation
SafeWork SA	Government department that administers the Dangerous Substances Act
SAIDI	System Average Interruption Duration Index
SAIG	Standards Australia International Global – This is, among other things, a gas appliance certification body (CAB) proclaimed by the Governor
SAILIS	South Australian Integrated Land Information System
SAP	Safety Awareness Plan
SAPN	SA Power Networks – operator of the electricity distribution network in South Australia
SAPOL	South Australian Police
SCADA	Supervisory Control and Data Acquisition
SEAGas	South East Australia Gas Pipeline – Gas pipeline that supplies natural gas from Victoria to Adelaide
SEPS	South East Pipeline System: a lateral gas pipeline off the SEA Gas pipeline that supplies natural gas to the Mt Gambier region
SRMTMP	Safety, Reliability, Maintenance and Technical Management Plan
Standards	Standards are either Australian or joint Australian and New Zealand Standards, as issued by Standards Australia (or previously published by Australia Gas Association).
STEDS	Septic Tank Effluent Disposal Scheme
STTM	Short Term Trading Market
SWE	Significant Weather Event
SWER	Single Wire Earth Return (19kV rural distribution feeder)
SWQ	South West Queensland
TAC	Technical Advisory Committee
TAFE	Training and Further Education
TGC	Tamar Gas Certification
the Commission	Essential Services Commission of South Australia
TJ	Terajoule (one million megajoules) – unit of energy
TOR	Terms of Reference
Type A	Mass produced, gas appliances, primarily domestic appliances, which are pre-certified by testing prior to sale and installation
Type B	Gas appliances, primarily industrial appliances, which must be certified on site to AS 3814
UAFG	Unaccounted for gas – difference between the quantity of natural gas measured into the network and the quantity measured out at consumers' meters; the difference may be due to leaking gas, differences in meter reading times, meter inaccuracy, gas theft, line pack differences and gas lost during commissioning of pipelines

UPS	Unprotected Steel Pipe
USAIDI	Unplanned System Average Interruption Duration Index
WITAC	Water Industry Technical Advisory Committee
WSAA	Water Services Association of Australia