



# Safety case preparation and submission guidelines

for gas distribution systems and gas plants



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# 1. Introduction

The Department of Energy, Mines, Industry Regulation and Safety – Building and Energy Division (Building and Energy) has developed this guideline to assist gas distribution networks' operators and gas plants operators with the process of preparing a safety case submission that will satisfy the requirements contained in the *Gas Standards (Gas Supply and System Safety) Regulations 2000* (the Regulations).

This guideline is prepared pursuant to regulations 29 and 51 of the *Gas Standards (Gas Supply and System Safety) Regulations 2000* and shall be read in conjunction with these Regulations. The guideline is applicable to all undertakers (as defined by the *Gas Standards Act 1972*) who operate and maintain a Gas Distribution System (as defined by the *Energy Coordination Act 1994*) and or a gas plant.

Building and Energy is Western Australia's building, plumbing and energy safety regulator. Building and Energy functions include the administration of technical safety regulations made under the *Gas Standards Act 1972*.

# 1.1 Scope

The Regulations introduce the safety case regulatory framework. The safety case aim is to provide for the protection of the public, gas distribution operating personnel, property, environment, network safety over the life cycle of a gas distribution system (GDS) or a gas plant and in situations where network decommissioning and abandonment occurs. The safety case also caters for the integrity of the GDS, network capacity management and security of supply. To achieve an acceptable level of protection, a safety case identifies the hazards and risks associated with the operation of a gas network or a gas plant and articulates the controls in place to mitigate these risks to an acceptable level so far as reasonably practical (SFARP).

All undertakers who operate a GDS or a gas plant are required to operate under an accepted safety case in accordance with regulations 37 and 59 of the Regulations. The approval of a safety case is a stepped process that requires submission to the Director of Energy Safety at various stages of acceptance and approvals. To make an acceptable safety case submission, an undertaker must arrange for certification of the safety case by an independent, competent person prior to submission. The certification is to ensure the safety case compliance with the requirements contained within the Regulations.

# 1.2 Terminology

In this guideline, the following terms and acronyms have the meanings described:

Term	Definition
Building and Energy	The Department of Energy, Mines, Industry Regulation and Safety - Building and Energy Division
GS Act	The Gas Standards Act 1972
EC Act	The Energy Coordination Act 1972

The Regulations	The Gas Standards (Gas Supply and System Safety) Regulations 2000
DES	Director of Energy Safety
SAOP	Safety and operating plan
FSA	Formal safety assessment
SMS	Safety management systems
GDS	Gas distribution system
SFARP	So far as is reasonable and practicable
КРІ	Key performance indicator
AS/NZS 4645.1	Australian/New Zealand Standard AS/ANZ 4645 Gas distribution networks Part 1: Network management
AS/NZS 2885.1	Australian/New Zealand Standard AS/ANZ 2885 Pipelines – Gas and liquid petroleum Part 1: Design and construction
AS 2885.3	Australian Standard AS 2885 Pipelines – Gas and liquid petroleum Part 3: Operation and maintenance

# 2. Distribution system safety case preparation and submission process

For a GDS the Regulations defines the safety case as a document that sets out the safety management and technical practices and procedures to be followed by a network operator in the operation of a distribution system.

# 2.1 Approval process

<u>Appendix A – GDS safety case</u>, provides an overview of the process of preparation and submission of a GDS safety case by a network operator to the DES.

The safety case approval process includes engaging an independent auditor, two stages of certification, and an implementation phase. Descriptions of the areas where regulations apply are provided on the following pages.

# 2.2 Safety case preparation

#### 2.2.1 Compile safety case - regulation 27

A safety case for a GDS is required to comply with the following Australian Standards:

- a. AS/NZS 4645.1, Gas distribution networks Part 1: Network management, and where applicable;
- b. AS/NZS 2885.1, Pipelines Gas and liquid petroleum Part 1: Design and construction; and
- c. AS 2885.3, Pipelines Gas and liquid petroleum Part 3: Operation and maintenance.

The Australian Standard AS/NZS 4645 uses the terminology of safety and operating plan (SAOP), which for the purpose of the Regulations means safety case (the AS/NZS 2885.1, uses the term pipeline safety management system, which is considered an equivalent meaning of a safety case in reference to distribution pipelines). The Regulations also prescribe various standards that covers the supplied gas quality, diaphragm meters standards and purge activities requirements where compliance is also required, these standards are:

- AS 4564, General-purpose natural gas (Limitations of gas properties table);
- AS 4670, Commercial propane and commercial butane for heating purposes (Table 1),
- AS 4647, Diaphragm gas meters; and
- IGE/SR/22, Purging Operations for Fuel Gases in Transmission, Distribution and Storage, (issued by the Institution of Gas Engineers and Managers).

The safety case needs to include a full description of the GDS and a formal safety assessment (FSA) and/or safety management study and management systems that covers all prescribed activities performed by the network operator. The Australian Standard AS/NZS 4645.1, Gas Distribution Networks Part 1: Network Management; section 2.4 'Safety and Operating Plan (SAOP)' provides details on the contents of a safety case. In addition, the safety case must also:

- 1. Identify the person with ultimate responsibility for safety of the GDS including the nominated person position in the organisation (typically an executive position), and the business address of the nominated person.
- 2. Include a signed statement from the most senior executive officer of the network operator. The statement needs to be in support of the safety case and accept the responsibilities that it calls for.
- 3. Identify the person responsible for preparation and submission of the safety case.
- **4.** Achieve compliance with the Regulations requirements.
- **5.** Determine the gas sampling (for quality and odorisation) methodology and intervals in a way that reflects to the size and complexity of the network.
- **6.** Provide an alternative means of leak detection, if an unodorised natural gas supply permit is sought from the DES under regulation 5(3).

Network's key performance indicators (KPIs) are recommended to be included (the AS/NZS 4645.1 provides detailed guidance on KPIs in its Appendix K).

#### 2.3 Nominate auditor

#### 2.3.1 Select auditor

Prior to the safety case submission to the DES, the network operator must select an auditor and nominate that auditor to the DES. The selected person must be:

- 1. independent from the network operator; and
- 2. competent to perform the functions of a nominated auditor under the Regulations.

#### 2.3.2 Nominate auditor to DES – regulation 30

When nominating an auditor, the network operator needs to provide sufficient information to allow the DES to make a decision on the suitability of the auditor.

The following information is recommended to be included with the nomination:

- **1.** A statement of independence.
- 2. Name of the proposed, lead auditor.
- 3. Name, ABN and address of the company or firm.
- **4.** The position of the nominated auditor within the auditing firm<sup>1</sup>.
- 5. Professional experience.
- 6. Qualifications<sup>2</sup>.
- 7. Professional memberships.
- **8.** Relevant experience in auditing safety management systems.

The nominated auditor must be familiar with the relevant standards listed in section 2.2.1.

# 2.3.3 Certification of safety case by nominated auditor – regulation 31

The auditor must certify that the safety case complies with the requirements of the Regulations and Australian Standards by preparing and signing a certificate certifying that:

- a. the safety case complies with the requirements of the Regulations;
- **b.** the safety case is appropriate to the size and complexity of the distribution system and the possible risks;
- c. the safety case adequately identifies the measures necessary
  - i. to prevent hazardous events identified in the safety case from occurring;
  - **ii.** to protect consumers, the public, employees, plant, equipment and the environment, should such events occur;
- **d.** the safety case adequately identifies the training and equipment requirements necessary for personnel to be able to implement the various procedures set out in it; and
- e. the network operator has in place a plan (the implementation plan) for
  - i. implementing the measures referred to in point (c); and
  - **ii.** meeting the requirements referred to in point (d).

Also, the certificate is to:

**a.** include a summary of the procedures, standards, tests, inspections and maintenance measures contained in the safety case; and

**b.** specify the estimated time for completion of the matters covered by the implementation plan. The submission of the safety case, implementation plan, and auditor cortificate, as outlined above.

The submission of the safety case, implementation plan, and auditor certificate, as outlined above, constitutes the initial phase in obtaining the DES approval for certification. However, the safety case cannot be put into effect until the second phase of certification is finalised and approved by the DES, and all identified measures and systems within the safety case are fully implemented.

<sup>&</sup>lt;sup>1</sup> Nominations are encouraged to include auditing firms that have more than one lead auditor.

<sup>&</sup>lt;sup>2</sup> Qualifications are expected to include formal relevant engineering degrees and or diplomas.

#### 2.3.4 DES Assessment – regulation 32

Once the safety case and preliminary certificate are complete, they need to be submitted to the DES for assessment. The DES will assess the submission against the requirements. Following the assessment, the DES will notify the network operator (in writing) of the decision of the safety case approval for the purpose of certification or otherwise refusal. In case of refusal, the DES will provide reasons of refusal and guidance as to the changes needed to make the safety case acceptable. The network operator may review and amend the safety case and resubmit it to the DES for reassessment.

# 2.3.5 Certification of approved safety case by nominated auditor - regulation 33

If the safety case is approved by the DES, the network operator may proceed to the second stage of certification. To satisfy the requirements of this stage, all the measures to ensure full compliance with the safety case need to be implemented on the specified implementation day and all the requirements of the regulations must be met.

Once the nominated auditor is satisfied that the required measures and processes are in place, the preparation of the certificate may proceed. Upon completion, the network operator may submit the certificate to the DES. This certificate, signed by the nominated auditor, must certify that:

- a. the measures referred to in Regulation 31(1)(c) have been implemented; and
- **b.** the requirements outlined in Regulation 31(1)(d) have been met.

The certificate must also specify the date on which the safety case is to be implemented. In some instances, the DES may stipulate a timeframe for submission of the certificate, considering the period specified for implementing the measures detailed in the implementation plan.

#### 2.3.6 Acceptance or rejection of safety case by the DES – regulation 34

On receipt of the certificate under regulation 33, the DES may accept the safety case or reject it, the DES will notify the network operator (in writing) of such decision In case of rejection, the DES will provide reasons for rejection and guidance as to the changes needed to make the safety case acceptable. The network operator may resubmit a certificate signed by the nominated auditor to the DES for reassessment.

# 2.3.7 Safety case implementation – regulation 35

Following the safety case acceptance, the safety case must be implemented subject to the following:

- the network operator must notify the date of implementation to the Director at least seven days in advance;
- the network operator has up to six months to implement the safety case, or such other period not greater than 18 months;
- the safety case must undergo an audit on an annual bases, with the resulting audit report submitted to the DES; and
- the safety case must be reviewed and recertified before its expiry every 5 years.

# 2.4 Amending, accepted safety case

An accepted safety case may be amended in accordance with regulations 39 and or 40.

#### 2.5 Records

A network operator must establish and maintain a system for record keeping in relation to an accepted safety case in accordance with Regulation 41.

# 3. Gas plant safety case preparation and submission process

A gas plant is defined in the Regulations (r.3), any gas plant constructed after the commencement of the Regulations must be operated under a safety case.

# 3.1 Approval process

<u>Appendix B – Gas plant safety case</u>, provides an overview of the process of preparation and submission of a gas plant safety case by a plant operator to the DES. The process includes engaging an independent auditor, one stage of certification, and implementation as detailed below.

# 3.2 Safety case preparation

The safety case needs to include a full description of the plant, formal safety assessment and to specify the safety management system, procedures for reporting gas incidents and records keeping. The safety case should also identify critical equipment and the system in place to ensure that the equipment is fit for purpose.

In addition, the safety case is also required to address the following:

- 1. Identify the person who has management or control of the gas plant, including the person's position in the organisation, and the business address of the person.
- 2. Identify the person who has general responsibility for the safe operation of the gas plant, including the person's position in the organisation, and the business address of the person.
- **3.** Identify the person responsible for preparation and submission of the gas plant safety case, including the person's position in the organisation, and the business address of the person.
- **4.** Include a signed statement from the most senior executive officer of the plant operator. The statement needs to be in support of the safety case and accept the responsibilities that it calls for.
- **5.** Address the gas plant requirements in Schedule 3 of the Regulations.

# 3.3 Nominate auditor – regulation 52

#### 3.3.1 Select auditor

Prior to submitting a gas plant safety case, the plant operator must nominate an auditor to the DES, the nominated auditor must be:

- 1. independent from the plant operator; and
- 2. competent to perform the functions of a nominated auditor under the Regulations.

#### 3.3.2 Nominate auditor to DES – regulation 52

When nominating and auditor, the plant operator needs to provide the DES with sufficient information to enable the DES to make a decision on the suitability of the auditor.

The following information is recommended to be included with the nomination:

- 1. A statement of independence.
- 2. Name of the proposed, lead auditor.
- 3. Name, ABN and address of the company or firm.
- **4.** The position of the nominated auditor within the auditing firm<sup>3</sup>.
- **5.** Professional experience.
- 6. Qualifications<sup>4</sup>.
- 7. Professional memberships.
- **8.** Relevant experience in auditing both quality and safety management systems.

Nominated auditors need to be familiar with the requirements of the gas plant safety case listed in Schedule 3 of the Regulations.

#### 3.3.3 DES review

Based on the provided information, the DES will either accept or reject the nomination of the Auditor. If the DES rejects the nomination, the plant operator may make an alternative nomination to the DES.

#### 3.3.4 Auditor review

The nominated auditor must conduct a comprehensive review on the safety case, following the detailed review an auditor needs to prepare and sign a certificate certifying that:

- a. the safety case complies with Schedule 3; and
- **b.** the safety case is appropriate having regard to the size and complexity of the gas plant and the possible risks; and
- c. all measures intended
  - i. to prevent hazardous events identified in the safety case from occurring; and
  - **ii.** to protect consumers, the public, employees, plant, equipment and the environment, should such events occur, are in place; and
- **d.** there are properly trained and equipped personnel available to implement the various procedures set out in the safety case.

The certificate is to include a summary of the procedures, standards, tests, inspections and maintenance measures contained in the safety case.

<sup>&</sup>lt;sup>3</sup> Nominations are encouraged to include auditing firms that have more than one lead auditor.

<sup>&</sup>lt;sup>4</sup> Qualifications are expected to include formal relevant engineering degrees and or diplomas.

#### 3.4 DES assessment

The safety case, and the auditor's certificate must be submitted for the DES for assessment.

# 3.4.1 DES Assessment - regulation 54

The DES will assess the submitted safety case. Following the assessment, the DES will notify the plant operator (in writing) of the decision of the safety case acceptance or rejection.

In case of rejection, the DES will provide reasons for rejection and guidance as to the changes needed to make the safety case acceptable. The plant operator must review and modify a rejected safety case and resubmit it to the DES for reassessment (under regulation 55).

#### 3.4.2 DES Assessment of a modified safety case - regulation 56

The DES will assess a safety case submitted after being modified under (regulation 55). Following the assessment, the DES will notify the plant operator (in writing) of the decision of the safety case acceptance or rejection. In some cases, the DES may determine the safety case that is to apply in respect of the gas plant.

#### 3.4.3 Determined safety case

The Director may in some cases determine the safety case to apply to the gas plant where:

- a. the plant operator fails to submit a safety case (under regulation 49 or 55); or
- b. the Director rejects a safety case submitted for the gas plant under regulation 55.

The DES will notify the plant operator of the determination (in writing). The DES's notification will set out the terms to the determined safety case.

Note that this does not prevent the plant operator from resubmitting a new safety case that address the minimum requirements of the determined safety case as set by the DES.

# 3.5 Safety case implementation

An accepted gas plant safety case has effect on and from the day on which:

- a) the DES gave the notification of acceptance; or
- b) the safety case is regarded as having been accepted under regulations 54(3) or 56(3); or
- c) notification is given under regulation 57(2), where the DES has determined the safety case for the gas plant.

Unlike the GDS safety case, the gas plant safety case doesn't expire every 5 years. However, a safety case is a live document, and it must be reviewed and updated frequently to reflect any equipment or procedural changes that may affect the gas plant. A network operator must conduct periodic auditing on an accepted safety case in accordance with Regulation 61.

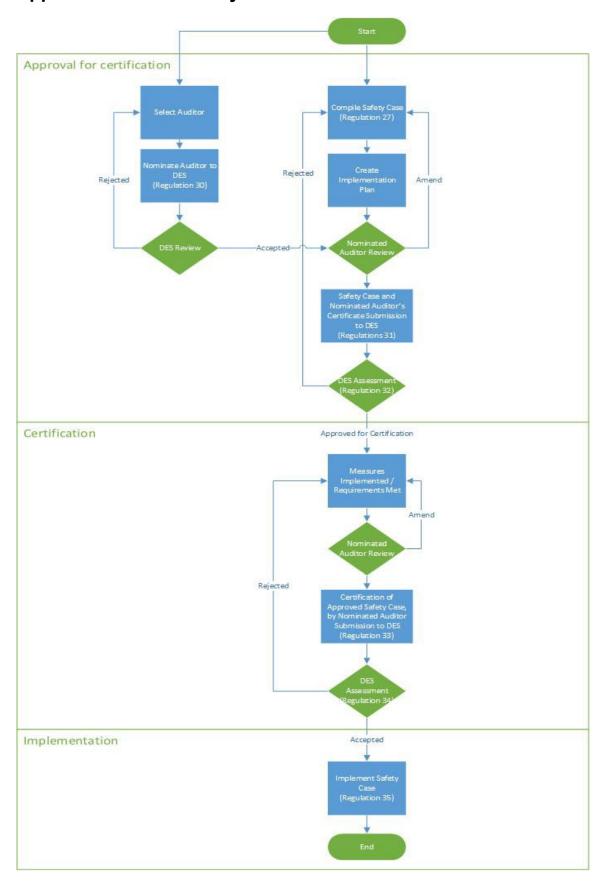
# 3.6 Amending, accepted safety case

An accepted safety case may be amended in accordance with regulations 62 and or 63.

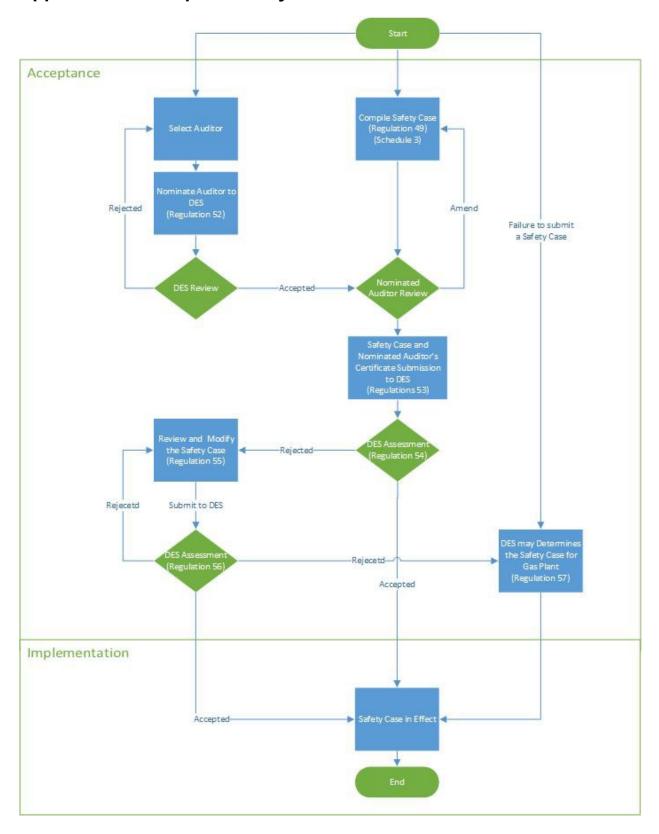
#### 3.7 Records

A plant operator must establish and maintain a system for record keeping in relation to an accepted safety case in accordance with regulation 64.

# Appendix A – GDS safety case



# Appendix B - Gas plant safety case



# References

- Gas Standards Act 1972
- Gas Standards (Gas Supply and System Safety) Regulations 2000
- AS/NZS 4645.1, Gas distribution networks Part 1: Network management

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