



# ATTACHMENT 10.104

## GHD:

# RISK MANAGEMENT APPROACH RESPONSE

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ATCO 2020-24 REVISED PLAN

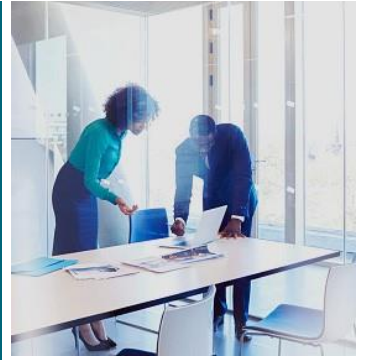
EIM # 99060513

PUBLIC

12 June 2019



**ATCO**



# AA5 Risk Management Approach Response

ATCO Gas Australia

9111050-REP-0003-Rev 1

3 June 2019



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# 1. Introduction

The Economic Regulation Authority (ERA) has provided feedback on ATCO Gas Australia, (ATCO)'s AA5 Security of Supply Project submissions as part of its Draft Decision on ATCO's Proposed Revisions to the Mid-West and South-West Gas Distribution System Access Arrangement for 2020 to 2024. These were submitted by ATCO Gas Australia on 18 April 2019.

ERA engaged Energy Market Consulting associates (EMCa) to review technical aspects of ATCO's AA5 submission. ERA has agreed with the findings related to Security of Supply assessment assumptions put forward as documented in EMCa, ATCO Gas Australia Proposed Access Arrangement for the Mid-West and South-West Gas Distribution Systems, Review of Technical Aspects of the Proposed Access Arrangement, March 2019.

EMCa assessed ATCO's Risk Management Framework, and provided its findings on how this framework has been applied in relation to Security of Supply projects. In EMCa's review of ATCO's AA5 Proposal, EMCa has stated that ATCO's quantitative likelihood descriptors are too conservative (by an order of magnitude) and are not in line with AS/NZS 4645.1:2018 Gas Distribution Networks – Network Management.

This report provides GHD's advice on ATCO's AA5 Risk Management Approach and opinion on EMCa's findings.

The report is designed to be read in conjunction with ATCO's Risk Management Approach Response [Ref. 1].

Each Section of this report aligns with the Sections in ATCO's Risk Management Approach Response. Sections are aligned to assist the reader to follow the original discussions of ATCO and EMCa from ATCO's report and compare it with GHD's advice on each subject.

## 1.1. Scope of this report


This report provides GHD's advice on ATCO's AA5 Risk Management Approach and opinion on EMCa's findings, based on documents received and reviewed, and referenced in Section 4.

## 1.2. AA5 Draft Decision Feedback on Risk Management Framework

Organisations are responsible for the development of their Risk Management Framework that is calibrated to the nature of risks that the organisation faces. The framework will likely capture a combination of inputs, and may not necessarily conform solely to any one specific standard. The prevailing principle that is used in this instance is that where practicable, the higher criteria should prevail so as to maintain the broader acceptability of risk management. In this case, AS4645, AS2885, Worksafe and other requirements will all contribute to ATCO's corporate risk framework.

ATCO's risk management framework, used to assess its security of supply projects, has been developed with consideration of the urban land planning standards that apply in ATCO's network area, and the relevant standards for gas transmission pipelines and gas distribution networks. ATCO's risk management framework was therefore developed based on all of the relevant standards.

GHD considers that the adoption of this approach of combining urban planning standards with relevant standards for gas transmission pipelines is reasonable due to the nature of the pipelines being considered in the security of supply projects. Whilst AS/NZS 4645 is the prevailing standard for assessing supply impact of



distribution networks, AS/NZS 2885 is the prevailing suite of standards for the construction and operation of high pressure steel pipelines > 1900 kPa Maximum Allowable Operating Pressure (MAOP) on the ATCO network. It is common for gas distribution networks to have key supply laterals constructed and operated to AS/NZS 2885 connecting to transmission pipelines.

The following key points should be considered when establishing the values and assumptions for determination of likelihood of various events for ATCO's pipelines.

- The relevant standard applicable to ATCO's high pressure steel pipelines > 1900 kPa MAOP is AS/NZS 2885.
- In AS/NZS 2885.6:2018, the frequency class Table F1 of Appendix F, highlights  $10^{-3}$  to  $10^{-5}$  events/1,000 km/year for Remote likelihood level. This frequency is per 1,000 km, so is equivalent to  $10^{-4}$  to  $10^{-6}$  likelihood of events per year for a 100 km pipeline, which is more typical of the lengths of some of ATCO's assets.
- The likelihood Table B2 of Appendix B of AS/NZS 4645.1:2018, highlights  $10^{-3}$  to  $10^{-5}$  events/year for a "Remote" likelihood level. The likelihood classification in AS/NZS 4645.1:2018 does not have any distance factor for pipelines (i.e. kilometre or metre), but is assigned for each location. The standard is not particularly clear in this regard. However, GHD understands this relates to a very specific position that is in keeping with the rest of the document. Based on GHD's experience in risk management, this would require risk for a range of locations is an aggregated value that should be considered for loss of supply, outage or overall societal assessment of safety.
- The frequency table of ATCO Report TCO RP 0283 Section 5.6, mentions  $10^{-4}$  to  $10^{-6}$  events/km/year for Remote Frequency. This frequency is per one kilometre.

## 2. ATCO's Quantitative Risk Approach Justification

GHD considers the approach taken in this section is reasonable given the evolving regulations and standards, diverse asset base, and typical organisational requirement to acceptably manage its risks.

### 2.1. AS/NZS 4645.1:2018 Gas Distribution Networks – Network Management

AS/NZS 4645 does appear to have ambiguities within it for definitions in the likelihood class between network and location and values. There are some implicit options to scale between these, but a standard should provide clear guidance rather than leaving the user having to make assumptions for more broad agreement. GHD agrees with ATCO's approach taken in this instance for likelihood classes.

### 2.2. AS/NZS 2885.6:2018 Pipelines Gas and Liquid Petroleum – Pipeline Safety Management

ATCO has made reasonable assumptions regarding locations or linear risk per unit length for pipelines in order to assess risks for their various assets.

In AS/NZS 2885.6:2018, the frequency class Table F1 of Appendix F, mentions  $10^{-3}$  to  $10^{-5}$  events/1,000 km/year for Remote Frequency. This frequency is per 1,000 km, so it relates to risk per unit length equivalent to  $10^{-5}$  to  $10^{-7}$  likelihood for a 10 km pipeline. ATCO's pipelines for this exercise range from one kilometre up to about 15 kilometres. As such, ATCO's selection of this frequency class is appropriate.

## 2.3. AS/NZS 4853:2012 Electrical Hazards on Metallic Pipelines

AS/NZS 4853 examines the risk of fibrillation as an equivalent for fatality in section 4.2. It defines low risk through to high risk as a probability for fibrillation from  $10^{-6}$  through to  $10^{-4}$  per year. The assessment is probabilistically developed in section 4.5 of the standard for assessment of individual and societal risk levels against the respective targets as absolute values versus risk levels per unit distance for pipelines.

AS/NZS 4853 is referenced by AS/NZS 2885 to assess risk to people from electrical hazards on pipelines. It quantifies fatalities in relation to frequency. As ATCO needs to comply with this standard, it is an appropriate input to be taken into account in the development of ATCO's overall corporate risk framework.

On this basis, we consider that the ATCO qualitative to quantitative correlation values utilised are consistent with and reasonable for assessing this risk type.

## 2.4. Industry Good Practice

Good industry practice is normally adopted by an organisation to manage the risks that it faces holistically and effectively. GHD agrees with this ATCO's approach.

### 2.4.1. Safe Work Australia

The HIPAP 4 is referenced by Worksafe Australia and can be used as values of tolerability and acceptability with respect to a facility for the aggregation of risks posed to adjacent residential areas. This can then be used for quantitative risk calculations to determine societal or other individual fatality risk values as required.

### 2.4.2. NSW Government, Department of Planning and Environment

The NSW Department of Planning and Environment's Hazardous Industry Planning Advisory Paper (HIPAP) No.4, while not a requirement in Western Australia, provides good guidance on the acceptable industry practice. On this basis, GHD agrees with ATCO's consideration of the guidance where appropriate.

### 2.4.3. Government of Western Australia Department of Planning, Lands and Heritage

The guidance material produced by the Department of Planning, Lands and Heritage is consistent with other individual risk criteria for land planning and is a guiding criteria for Western Australia (WA).

### 2.4.4. WA Environmental Protection Authority (EPA)

GHD acknowledges the Western Australian Environmental Protection Authority guidance has been used historically.

### 2.4.5. United Kingdom Health and Safety Executive (UK HSE)

The UK HSE has been a worldwide benchmark in risk management for many years, this guidance is generally used throughout the international oil and gas industry. It provides guidance for certain criteria and values in managing risks outside of local standards and regulations. Australian State or National legislation usually prevails unless otherwise noted.

ATCO's risk framework takes account of the risk approach and tolerability values and ALARP methodology for safety from the UK HSE. GHD considers this approach is reasonable.

#### **2.4.6. British Standard PD 8010-3:2009+A1:2013**

Good guidance and approaches can be implemented from adoption of this standard when Australia regulations and standards are taken into consideration. The method contained in this standard has been used by some Australian oil and gas companies with high pressure steel pipelines. ATCO's use of a semi quantitative approach is consistent with this standard. The direct application is relevant to the assessment that ATCO needed to undertake.

## **3. Safety Case Obligations**

Legislated safety case obligations such as set out in the Gas Standards (Gas Supply and System Safety) Regulations 2000 have bearing on the safe practices with which ATCO must carry out management of distribution assets. Management of the assets must be undertaken a way that ensure the safety of workers and the public as far as is practicable.

ATCO's safety case stipulates obligations that must be complied with such as the risk management approach and the quantitative tolerance values.

The gas supply and system safety regulations of Western Australia stipulate the compliance to the approved safety case.

GHD agrees that ATCO must meet the obligations of their approved safety case. In this instance the approved safety case requirements with respect to risk management are more onerous than the minimum requirements in AS/NZS 4645.1:2018.

## **4. References**

1. ATCO AA5 Risk Management Approach Response – TCO RP 0379 Dated 27/05/2019
2. AS/NZS 4645.1:2018 Gas Distribution Networks – Network Management
3. AS/NZS 2885.6:2018 Pipeline – Gas and Liquid Petroleum , Part 6: Pipeline Safety Management
4. AS/NZS 4853 – 2012 Electrical hazards on metallic pipelines
5. Department of Mines and Petroleum, *Guideline – Submission of a petroleum pipeline safety case*, 2011
6. Attachment 12.11 Safety Case – ATCO 2020-24 Plan, Public 31 August 2018, ATCO Gas Australia, Gas Distribution System Safety Case, Rev 6
7. ATCO Attachment G – HP Steel Pipeline Semi-Quantitative Risk Assessment – TCO RP 0253 Rev 0
8. ATCO Attachment H – Supply Interruption Customer Weeks Lost Assessment – TCO RP 0287 Rev 0
9. ATCO Supply Risk Assessment – North Region – TCO RP 0209 Rev 1
10. ATCO Class 300 & 600 Pipelines Semi-Quantitative Risk Assessment – TCO RP 0278 Rev 0
11. ATCO Supply Risk Assessment – Southern, Eastern & Regional Networks – TCO RP 0283 Rev 0



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<https://projects.ghd.com/oc/Advisory2/atcoadviceonriskbase/Delivery/Documents/9111050-REP-0003-Rev 1 AA5 Risk Management 03June2019.docx>

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