Business Case – Capital Expenditure

Liquids Management

Business Case Number BC260 AA23-27

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

Updated By	Adam Newbury	Asset Lifecycle Specialist, Asset Management
Cost Updated By	Prasoon Premachandran	Victorian Team Lead Project Delivery, Engineering & Planning
Reviewed By	Nicholas King	Mechanical Engineer, Engineering & Planning
Approved By	Daniel Tucci	Victorian Asset Manager, Asset Management

2 Project Overview

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

Description of Issue/Project	The aim of this business case is to ensure liquids removed from pipeline systems in accordance with Gas Safety Regulations. The objective of this business case is to upgrade existing liquids management systems to the APA standard design. Scope for the 2023-2027 period is as follows; • Brooklyn liquids management system upgrade. • Wollert liquid level indicator upgrade. The implemented solution will be as per completed upgrades to date and consist of a low risk, low cost asset without the need of pressure vessels and other high maintenance equipment.
Options Considered	The following options have been considered: Option 1: Do Nothing Option Option 2: Upgrade of existing liquids management systems
Proposed Solution	Upgrade of existing liquids management system to APA standard design.
Estimated Cost	$600,000
Consistency with the National Gas Rules (NGR)	The replacement of these assets complies with the new capital expenditure criteria in Rule 79 of the NGR because: • it is necessary to maintain and improve the safety of services and maintain the integrity of services (Rules 79(2)(c)(i) and (ii)); and • it is such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services (Rule 79(1)(a)).
Stakeholder Engagement	Energy Safe Victoria requires all gas companies to take all practical steps to minimize the threat of liquids in pipeline systems. All downstream stakeholders; networks, large consumers and volume tariff consumers will benefit from the removal of liquids in gas pipelines. The benefits are an improved gas quality which improves reliability and performance of gas appliances.

3 Background

Project resubmitted – ongoing program of work

Pipeline systems generally accumulate liquid from upstream sources like gas production, gas compressor wet seals and plant interruption events. These liquids are generally extracted at large stations and held in tanks until disposed appropriately.

The VTS has one liquids management system that is no longer fit for purpose at Brooklyn. Older designs usually contain pressure vessels which require ongoing maintenance and internal inspections, whereas the new designs do not. The AER have previously approved similar projects as conforming capital expenditure and the new design has been installed in Euroa, Longford, Dandenong, Winchelsea and Pakenham is also nearing completion.

In addition, the Wollert liquid management system has a level indicator system that requires upgrade to enable maintenance staff to monitor and schedule liquid collection.

4 Risk Assessment

TABLE 3: RISK RATING

Risk Area	Risk Level
Health and Safety	**Moderate**
Environment	**Moderate**
Operational	**Low**
Customers	**Moderate**
Reputation	**Low**
Compliance	**Low**
Financial	**Low**
Final Untreated Risk Rating	**Moderate**

The existing liquid management facilities are no longer fit for purpose and can lead to liquids remaining in the pipeline with potential for customer interaction, gas compression equipment damage or spillage of liquids at the station.

5 Options Considered

5.1 Option 1 – Do Nothing

The Do Nothing option is not considered prudent as APA will not meet the following requirements;

The technical regulator, Energy Safe Victoria has reminded APA and other gas companies of the requirements under the Gas Safety Act and Regulations (see attached letter). The requirements are to implement all practical means of preventing liquid entry to the gas and to remove it.

The Australian Standard for gas quality AS4564 limits oils present in gas to a maximum of 20mL per TJ.

5.1.1 Cost/Benefit Analysis

The benefits of the Do Nothing option are negligible as we are not compliant with liquids removal requirements.

5.2 Summary of Cost/Benefit Analysis

The section should include a general overview of how the options compare and identify any options are not technically feasible.

TABLE 4: SUMMARY OF COST/BENEFIT ANALYSIS

Option	Benefits (Risk Reduction)	Brooklyn	Wollert	Costs
Option 1	Do Nothing	Indeterminate	Indeterminate	Indeterminate
Option 2	Install Liquids management system	$350,000	$250,000	$600,000

5.3 Option: 2 Proposed Solution - Install Liquids Management Standard Design

The proposed solution is to:

1. Replace the existing liquids management systems at Brooklyn and with the APA standard design.
2. Upgrade the level indicator system at Wollert with the APA standard design.

5.3.1 Why are we proposing this solution?

The Gas Safety (Gas Quality) Regulations 2007 section 6 - Quality of gas require:

(1) The prescribed standard of quality for natural gas conveyed through a transmission pipeline or a distribution pipeline is set out in AS 4564.

(2) The prescribed standard of quality for the supply or sale of natural gas supplied to a customer through a distribution pipeline is set out in AS 4564.

AS2885-1 4.1 (k) Basis of Selection requires: “For gas pipelines, the likelihood, extent and consequences of the formation of condensates and hydrates in the pipeline is established and prevention or mitigation measures are put in place to ensure the safe operation and integrity of the pipeline.”

Energy Safe Victoria has sent a letter to all gas companies enforcing the need to implement measures to reduce the conveyance of liquids in gas pipeline systems.

5.3.2 Consistency with the National Gas Rules

Consistent with the requirements of Rule 79 of the National Gas Rules, APA considers that the capital expenditure is:

- Prudent – The expenditure is necessary in order to improve the safety of services to personnel and is of a nature that a prudent service provider would incur.
- Efficient – The implemented solution will be the APA standard design without the need for pressure vessels and complex pressure regulation and safety devices.
- Consistent with accepted and good industry practice – Removing liquids form pipeline systems is required by the Gas Safety Regulations.

5.3.3 Forecast Cost Breakdown

The cost of the Pakenham installation was approximately $350,000, Brooklyn scope is similar so this amount has been budgeted.

The cost of upgrading the level indication system at is estimated at $250,000 from similar recent installations.

TABLE 5: PROJECT COST ESTIMATE,

	Brooklyn Liquid Management Upgrade	Wollert Liquid Level Indicator Upgrade	Total
Internal Labour	$50,000	$50,000	$100,000
Materials	$200,000	$200,000	$400,000
Contracted Labour	$100,000		$100,000
Other Costs	$0		
Total	$350,000	$250,000	**$600,000**

6 Acronyms

Acronym	Definition/Description
AEMO	Australian Energy Market Operator
AGA	Australian gas association – Type B compliance governing body
API	American Petroleum Institute – publisher of standards
CHAZOP	Control system HAZOP – study of the control system functions to identify logic vulnerabilities
ESD	Emergency shutdown – control system-initiated shutdown designed to prevent incident escalation if operating parameters are breached
ESV	Energy Safe Victoria
HAZOP	Hazard and operability study
HMI	Human machine interface
ILI	Inline inspection – pipeline internal inspection
OEM	Original Equipment Manufacturer
RA	Risk Assessment
RBI	Risk Based Inspection – a process used to prioritise maintenance or inspection activities based on risk of failure.

SIL	Safety Integrity Level – an assessment used to rank control systems by their ability to fail safely
SMS	Safety Management Study
VTS	Victorian Transmission System

Appendix A – Energy Safe Victoria Directive

RECEIVED
20 MAR 2006
BY:.....

File

energysafe VICTORIA

→ DW cc
DY to

Ref: DY0221

27 March 2006

Chief Executive Officer
GasNet Australia Pty Ltd
180 Greens Road
DANDENONG VIC 3175

Dear Christine

LIQUIDS IN GAS PIPELINES

Energy Safe Victoria (ESV) is concerned by the increase in incidents arising from the presence of hydrocarbon liquids in the Victorian gas transmission and distribution networks. While some liquids have been present in the gas supply system for many years, the extent and the movement of these liquids are now such that they pose a significant threat to the safe and secure supply and use of natural gas in Victoria.

Energy Safe Victoria (ESV) requires that all gas companies take all practicable steps to minimise the risks from these liquids to domestic, commercial and industrial consumers.

The liquids are present as a mixture of processing fluids, condensate liquids and compressor lubricating oils and may lie latent in systems until such time as gas usage and transportation velocities reach a level where they cause the liquids to be entrained in the gas stream and enter consumer appliances or slugs of liquid become mobile due to high gas velocities. Alternatively, routine pigging activities can shift liquids that have accumulated.

There have been recent examples where hydrocarbon liquids have appeared in industrial gas appliances resulting in significant disruption to their safe and stable operation with the potential for a major safety incident.

ESV recognises and welcomes the formation of an industry group to monitor and coordinate actions to minimise potential impacts on consumers. There is still, however, a continuing need to focus on both removing existing liquids and minimising any additional liquids that may enter gas transmission and distribution systems.

It is a requirement of ESV that all natural gas transmission and distribution companies put in place measures to manage the entry of liquids and continue to work together to prevent existing liquids from impacting on consumers.

It is also recognised by ESV that to comply with these requirements and to achieve the objective of minimising any impacts from liquids, significant additional short and longer term capital investment in existing and new gas systems may be required including:

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Collins Street West
Victoria 8007
Phone (03) 9203 9700
Fax (03) 9686 2197
Web www.esv.vic.gov.au

Victoria
The Place To Be

- Addition of filters/coalescers
- Where technically feasible use of dry seal compressors (ESV notes that GasNet has already committed to a dry seal installation program on selected compressors)
- Installation of temporary liquid traps during pigging operations
- Installation of purpose designed liquid traps and drains at consumer branches
- Installation of equipment to monitor and control hydrocarbon dewpoints
- Liquid removal facilities on industrial and domestic appliances

We remind you of your obligation under the Gas Safety Act to ensure that, as far as is reasonably practicable, risks to people and property are minimised. We also remind you of your obligation to comply with the Gas Safety (Gas Quality) Regulations and with the VENCorp Gas Quality Guidelines.

ESV's requirement, therefore is that all gas companies take all appropriate steps to prevent the entry of liquids into gas transmission and distribution networks and to manage the safety and supply security issues arising from liquids in gas networks on an ongoing basis.

Yours sincerely

EXECUTIVE MANAGER, INFRASTRUCTURE SAFETY

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