Business Case – Capital Expenditure less than $500,000

BCS Unregulated Bypass Upgrade

Business Case Number BC242 AA23-27

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

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

2 Background

Project resubmitted – deferred due to reprioritization.

The Brooklyn Compressor Station (BCS) - Station bypass is currently setup to be manually regulated by throttling across either of the 2 x plug valves (6237 and 6234 drawing reference – 1200-PA-005). This has the potential of over-pressuring the 2800Kpa pipeline from the T56 or T24 which operates at a Maximum Allowable Operating Pressure (MAOP) 7,400 kPa pipelines.

It is not standard APA practice to manually throttle valves over such a large pressure differential due to the reliance on the technician skill in such an approach significantly increases the risk of error and over pressurisation. Over-pressurisation can lead to pipe rupture. This procedural means is not an acceptable method for pressure regulation.

The Australian Standard for pipeline design; AS2885.1-2012 stipulates requirements for the separation of pipeline sections with different MAOP. Section 7.2.2 states:

> *"Where isolation is used to separate sections with a different MAOP, the minimum requirement for separation by isolation shall be two isolation components, two valves or one valve and a blind. A method of venting the space between the two isolation components shall be provided."*

The design of the station bypass does not comply with this requirement. The solution is to disconnect the station bypass with a valve and blind.

It is believed the station bypass pipeline was first installed to allow the T56 and T24 to operate in the event of T33 shutting down. Between the 1960s – 1990s, all the gas came from Longford. Now, with Western Underground Storage System (WUGS) and T112 pipeline, the need for the station bypass pipeline is removed.

The aim of this project is to totally remove any possibility of a safety breach associated with manual regulation of the BCS station bypass pipeline. To achieve this aim, the station bypass pipeline upstream of Valve 6234 will be disconnected and blinded.

3 Risk Assessment

TABLE 3: RISK RATING

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

4 Identification and Assessment of Options

4.1 Option 1 – Do Nothing

- Leave as is – reliant on technician skill and subjectivity to manually regulate the station bypass pipeline.
- The risks involved with doing nothing or deferring the project remains high.
- Reduced pipeline capacity due to pipeline failure due to over-pressuration.
- The 'Do – Nothing' option is not considered a viable alternative, due to the severity of the untreated risks including catastrophic failure.

4.2 Option 2 - Upgrade Station Bypass

Option 2 involves:

- Cutting and shutting station bypass pipeline upstream of V6234 and installing caps at each exposed end. Existing valves will not be removed.
- The costs of eliminating the risk of over-pressuration is low compared to the cost of repairs from a pipe rupture event.
- Option 2 addresses the risk and aligns with Australian Standard AS2885.1-2012.

4.2.1 Why are we proposing this solution?

- Valves 6234 and 6237 are not maintainable in their current form.
- Eliminate risks of manual regulation of the station bypass pipeline.
- Meet industry best practice to not manually regulate valves with a very high pressure differential.
- No foreseeable purpose of the station bypass pipeline.

4.2.2 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 maintain and improve the safety of services and maintain the integrity of services to customers and personnel and is of a nature that a prudent service provider would incur.

- Efficient – The field work will be carried out by the external contractor that has been used to date, who has demonstrated specific expertise in completing similar works in a safe and cost effective manner. The expenditure can therefore be considered consistent with the expenditure that a prudent service provider acting efficiently would incur.

- Consistent with accepted and good industry practice – Addressing the risks associated with unregulated bypass valves is accepted as good industry practice. In addition, the reduction of risk to as low as reasonably practicable in a manner that balances cost and risk is consistent with Australian Standard AS2885.

- To achieve the lowest sustainable cost of delivering pipeline services – The sustainable delivery of services includes reducing risks to as low as reasonably practicable and maintaining reliability of supply.

4.2.3 Forecast Cost Breakdown

TABLE 5: PROJECT COST ESTIMATE,

	Total
Internal Labour	$74,888
Materials	$32,000
Contracted Labour	$234,616
Other Costs	$0
Total	$341,504

5 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