Business Case – Capital Expenditure

Pipe Lagging and Coating Replacement

Business Case Number 209

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

Prepared By	Anthony Jones, *Pipeline and Asset Management Engineer, APA Group*
Reviewed By	Alan Bryson, *Integrity Manager East Coast Grid Engineering, APA Group*
Approved By	Craig Bonar, *Manager East Coast Grid Engineering, APA Group*

2 Project Overview

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

Description of Issue/Project	The pipe lagging that reduced noise to the environment has reached end of life, in addition, the lagging can permit water ingress and promote pipe corrosion.
Options Considered	The following options have been considered: 1. Option 1: Do Nothing Option 2. Option 2: No Alternative Identified 3. Option 3: Replace Lagging at 10 Year Intervals
Estimated Cost	$724,594
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	The stakeholders affected by this project are: • Australian Energy Market Operator • Landowners (noise)

3 Background

APA operates multiple compressor stations which create large noise intensity. The typical method of mitigating noise is the use of pipe lagging, where a thick noise insulator is wrapped around the pipe with a metal housing to protect the insulation.

This insulated piping system could lead to Corrosion Under Insulation (CUI) due to moisture being trapped inside the insulation as a result of rain, water leaks, and condensation. This usually results in localised corrosion from the six o'clock position of these piping systems.

Another form of lagging is for personnel protection. This type of lagging is to insulate the hot pipe in order to prevent accidental heat injury to personnel. Whilst the moisture gathered in this type of lagging evaporated during operation,

the cyclical nature of our compressors create particularly aggressive conditions for corrosion with condensation and re-evaporation of atmospheric moisture.

The below picture is an example of pipe work after cladding removal.

4 Risk Assessment

TABLE 3: RISK RATING

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

The damp and confined environment of water and steel will slowly yield to pipe failure if not detected. If the undetected corrosion remains, pipe failure will eventuate. The failure will cause that high pressure piping to be shut

down. This is will prevent the compressor from operating for a significant period of time whilst the pipe can be repaired. Compressor downtime will affect the gas market and potentially thousands of customers will be affected.

5 Options Considered

5.1 Option 1 – Do Nothing

The Do Nothing option is to wait for pipe failure through leakage of gas. This will result in the unit being shut down until repaired. Any repair from a loss of containment will cost significantly more than the cost to perform inspection and remediation.

5.2 Summary of Cost/Benefit Analysis

TABLE 4: SUMMARY OF COST/BENEFIT ANALYSIS

Option	Benefits (Risk Reduction)	Costs
Option 1	Do Nothing	Indeterminate
Option 2	No other alternative identified	
Option 3	Replace lagging at 10 year intervals	$724,594

5.3 Proposed Solution

5.3.1 Replace lagging at 10 year intervals

The lagging has a life of approximately 10 years, however the insertion of moisture from degraded lagging will result in pipe corrosion. APA is proposing to replace pipe lagging every 10 years or earlier if inspections show evidence of failure.

5.3.2 Why are we proposing this solution?

Typically lagging is installed on the suction and discharge pipework immediately upstream and downstream of the compressor and is of large diameter and heat treated during fabrication. Remediating the pipe from pitting corrosion is not difficult. Repairing the pipe after through wall corrosion will cost significantly more than remediation and will take a minimum of four weeks to complete.

A through wall corrosion defect will cause a loss of containment of gas into the atmosphere, causing shutdown of the plant. The plant will be unable to supply for a significant length of time that will impact the gas market.

The VTS is comprised of multiple Pipeline Licenses, each License requires APA operate the pipeline and facilities to AS2885.3. Section 8.1(b) of AS2885.3 states “Maintenance of stations shall ensure that the structural and pressure integrity of stations is not compromised over time.” The ability to implement and comply with the standard, as directed in the Pipeline License requires pipe lagging replacement.

5.3.3 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 a suitably qualified external contractor. The expenditure will be undertaken consistent with the APA procurement policy. 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 corrosion of above ground assets and replacing insulation components that have reached the end of their useful life 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.

5.3.4 Forecast Cost Breakdown

Each compressor station will have at least 30m of lagging per compressor unit. The following table shows the stations, number of units and approximate year of replacement.

Station	Units	Year of Replacement
Gooding	4	2018
Wollert A	3	2019
Wollert B	3	2021
Brooklyn 12	1	2020
Iona	2	2019
Springhurst	1	2017
Euroa	1	2022

A quote has been received for $33,600 for each 30m section. The work will need to be supervised by a Permit Issuing Officer and visually inspected which is expected to take 5 working days per 30m section. An allowance for specialized Non-Destructive Testing is required for each site as some corrosion is expected.

TABLE 5: PROJECT COST ESTIMATE,

	Total
Internal Labour	**$171,469**
Materials	**0**
Contracted Labour	**$553,125**
Other Costs	**0**
Total	**$724,594**