

## Business Case – Capital Expenditure

# Pipe Support Replacement

Business Case Number 263

## 1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

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

## 2 Project Overview

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

<b>Description of Issue/Project</b>	Replacement of inferior pipe supports with modern design to prevent corrosion at locations: <ul style="list-style-type: none"> <li>Dandenong City Gate</li> <li>Various compressor and city gate stations</li> </ul>
<b>Options Considered</b>	The following options have been considered: <ol style="list-style-type: none"> <li>Option 1: Do Nothing Option</li> <li>Option 2: No other alternative identified</li> <li>Option 3: Replacement of inferior pipe supports</li> </ol>
<b>Estimated Cost</b>	\$824,055
<b>Consistency with the National Gas Rules (NGR)</b>	The replacement of these assets complies with the new capital expenditure criteria in Rule 79 of the NGR because: <ul style="list-style-type: none"> <li>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</li> <li>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)).</li> </ul>
<b>Stakeholder Engagement</b>	A couple of sentences detailing how our engagement with stakeholders relates to this project. <ul style="list-style-type: none"> <li>Australian Energy Market Operator</li> </ul>

## 3 Background

Pipe supports provide a means for heavy pipe and components to be supported during operation. Over time changes to standard designs have improved the long term performance of supports. In particular the new designs reduce crevice corrosion, lateral loads and subsidence.

Ineffective supports will promote crevice corrosion or excessive pipe strain leading to failure. These failures can be prevented by periodic inspections and rectification where necessary.



The above photo shows a pipe support on the right that has an interface between the concrete and the steel pipe. This support design is acceptable until the coating (paint) deteriorates and allows moisture and direct contact between steel and concrete. When this occurs is unknown as it cannot be inspected. The support on the left demonstrates a support with similar performance but longer life.



The above photo demonstrates the localized pitting corrosion where a pipe support has been removed. Note that either side of where the pipe support attached to the pipe is free from corrosion and paint in reasonable condition.

## 4 Risk Assessment

TABLE 3: RISK RATING

Risk Area	Risk Level
Health and Safety	Low
Environment	Low
Operational	Moderate
Customers	Moderate
Reputation	Moderate
Compliance	Moderate
Financial	Low
<b>Final Untreated Risk Rating</b>	<b>Moderate</b>

The environment within some pipe supports promotes corrosion once the coating system deteriorates. In some conditions this corrosion is not able to be identified without either removing the support (replacement) or until a loss of containment. A loss of containment will likely result in a small, manageable gas leak, but difficult to repair.

The cost of a loss of containment at most facilities is high as the pipeline will need to be shutdown to enable repairs or replacement of pipe to take place.



## 5 Options Considered

### 5.1 Option 1 – Do Nothing

The Do Nothing option is to risk pipe failure in order to delay the inevitable expenditure.

#### 5.1.1 Cost/Benefit Analysis

Most pipe supports will be fit for purpose for at least 30 years in good conditions and replaced on a condition monitoring basis. Some pipe supports create otherwise preventable pipeline failure and the do nothing option must accept that risk.

### 5.2 Summary of Cost/Benefit Analysis

TABLE 4: SUMMARY OF COST/BENEFIT ANALYSIS

Option	Benefits (Risk Reduction)	Costs
Option 1	Do Nothing	
Option 2	No other technical solution available	
Option 3	Replace pipe supports	\$824,055

### 5.3 Proposed Solution

#### 5.3.1 Replace Pipe Supports as required

The proposed solution is to replace supports that are not of suitable design to the standards of the day. The identified locations are:

Fully sleeved supports

- Dandenong City Gate (6)
- Dandenong to West Melbourne Pig Traps (4)

Contemporary support types:

- Pig traps (8)
- Pressure limiters and city gates (20)
- Compressor Stations (20)

The supports types are separated by design as the cost to rectify are more for the fully sleeved supports than contemporary design.

#### 5.3.2 Why are we proposing this solution?

The older design of pipe supports often used wide concrete supports with the pipe contacting the concrete with minimal interface protection. When the pipe begins to corrode, it cannot be inspected and thus corrosion can continue unidentified. Recent replacements of some supports of this design have shown corrosion.

### 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 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 conducted 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 and replacing assets 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

#### Unit Rates

- Fully Sleeved or complex supports
  - The average cost of replacing one support is approximately \$30,000 for the fully sleeved support type.
  - This unit rate is based on recent experience on the Dandenong City Gate project and the Brooklyn Lara pig trap support replacement project
- Contemporary or simple supports
  - The unit rate for contemporary design of support is approximately \$2,300 for steel work only.

The above unit rates are excluding costs for design, supervision, Permit Issuing Officers and project management.

TABLE 5: PROJECT COST ESTIMATE,

	Total
Internal Labour	\$235,444
Materials	\$0
Contracted Labour	\$588,611
Other Costs	\$0
<b>Total</b>	<b>\$824,055</b>

