Business Case – Capital Expenditure

Emergency Response Equipment

Business Case Number BC239 AA23-27

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

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2 Project Overview

Project resubmitted – ongoing program of work

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

Description of Issue/Project	The VTS is required to maintain emergency response and recovery equipment and material in order to deliver timely management and recovery from pipeline events. The inability to efficiently and effectively respond and repair pipeline damages could result in prolonged loss of supply to customers and greater risks of Health & Safety and Environmental impacts from emergency scenarios to workforce and neighbouring communities.
Options Considered	The following options have been considered: 1. Option 1: Do Nothing Option 2. Option 2: Third Party Emergency Response (Hot Tap Equipment only) Option 3: Purchase Emergency Pipe and Equipment (Proposed Solution)
Estimated Cost	$7,62m
Consistency with the National Gas Rules (NGR)	The acquisition of equipment for emergency response 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 primary stakeholders affected by this project are: • Energy Safe Victoria • Australian Energy Market Operator

3 Background

VTS Australia (Operations) Pty Ltd (VTS) under APA Group is a declared operator of a Declared Essential Service under the Terrorism (Community Protection) Act 2003. Under the Act, APA must prepare a risk management plan meeting the requirements set out in the Act, including emergency response and recovery. In addition, the Pipeline License requires APA to maintain compliance with Australian Standard AS2885.3. This standard stipulates that the Pipeline Operator must maintain suitable emergency response equipment.

This business case is for the emergency pipe and equipment. The subsequent sections describe the background of various pipe and equipment considered in this business case.

3.1 Emergency Pipe and Equipment

1.1.1 Emergency Pipe

The emergency pipe stored at Dandenong is unable to meet current standard requirements due to lack of pipe traceability and original documentation to allow validation of meeting standard requirements pertaining to fracture toughness and grade for each pipeline asset.

Recent changes to AS2885.1 now require Emergency Pipe to comply with the Fracture Control requirements of the individual pipeline assets. Due to the age of the VTS system and the lack of traceability of the existing emergency pipe stock it is recommended to be replaced with pipe that is compliant to the Fracture toughness requirements and grade requirements. Pipe not complying with the asset requirements will be disposed and replacement pipe will be procured, hydrotested and stored.

1.1.2 Emergency Equipment

The emergency equipment for the VTS was purchased from the 1970s and 1980s and is not adequate for providing repairs for several pipelines within VTS. This is due to following factors:

1. Lack of equipment traceability and documentation.
2. Declining manufacturer support due to safety and servicing issues of the equipment due to age.
3. Equipment with known Maximum Working Pressure (MWP) are not suitable for pipelines that have Maximum Allowable Operating Pressures (MAOP) up to 10,200 kPa (CL600 pressure) within VTS.

The emergency equipment as part of this business case scope includes the following:

1. Hot Tap Equipment.
2. Vents and Flares

1.1.3 Hot Tap Equipment

An analysis was conducted to compare the Hot Tap Equipment Maximum Working Pressure (MWP) and the VTS pipeline lowest and highest MAOP based on pipeline diameter to determine whether the equipment remain suitable for Hot Tap repairs. The existing equipment will be kept and used for pipelines with lower MAOPs, as spares where possible, traded in or sold.

1.1.4 Vents and Flares

The existing vents and flares have limited capacity and the pressure rating is lower than the maximum allowable operating pressure of some pipelines. This creates a situation where pipeline pressure must be reduced prior to venting or flaring by the Australian Energy Market Operator.

The vent stacks housed in the Dandenong workshop are suitable for pipelines with MAOPs up to 5,100 kPa (CL300 pressure) and 10,200 kPa. These vent stacks do not have pressure rating information on the body and are not suitable for using on pipelines that have MAOPs up to 10,200 kPa. Additionally, some of these vent stacks do not have adaptor fittings to be fitted as they will be installed on special enclosures in main line valve (MLV) sites for usage. This can drastically affect pipeline blowdown operations within the VTS system especially during emergency response.

4 Risk Assessment

TABLE 3: RISK RATING FOR PIPE AND HOT TAP EQUIPMENT

Risk Area	Residual
Health and Safety	Moderate
Environment	Low
Operational Capability	Moderate
People	Moderate
Compliance	Moderate
Reputation & Customer	Moderate
Financial	Moderate
Residual Risk Rating	Moderate

Emergency Response is a critical control for a number of risks associated with the safe and reliable operation of VTS. This control is key in mitigating consequence escalation and enabling reinstatement to normal operations in a safe, efficient and timely manner. Whilst the VTS has gas supplied from multiple sources, the capacity of the network is severely constrained during an emergency scenario. This would potentially lead to a loss of supply of gas to major customers and consumers.

In addition, VTS Operations and Maintenance team requires the appropriate equipment to perform emergency work safely. Attempting to perform high risk work without appropriate equipment could lead to severe Health and Safety consequences to VTS personnel or the neighbouring public and adversely affect the environment.

5 Options Considered

1.2 Option 1 – Do Nothing

This option involves VTS not proceeding to acquire the emergency pipe and equipment mentioned in Section 3, *Background*.

1.2.1 Cost/Benefit Analysis

This option is strongly not recommended as this can result in a major inadequacy in emergency response capability for VTS as well as other stakeholders that contract VTS for their operational services due to:

- Contractors do not often hold suitable equipment in Australia and require sourcing from overseas when available. This will dramatically affect the response time (in excess of 2-3 weeks) to implement a repair.
- The equipment is not suitably rated and will require depressurisation of the asset to allow pressure within the limits of the equipment. This is often not achievable especially during peak demand.
- The existing emergency pipe inventory once installed and sample tested may not comply with AS2885 requirements, requiring rework adding to additional costs and pipeline outages. Pipe has a long lead time and availability of high grade pipe is dependent upon mill production requirements. Small volumes required do not meet minimum order requirements and are likely to be costly.

- Reputational and safety impact for not having the ability to safely and efficiently vent or flare the assets after an uncontrolled release. Flaring also provides an environmental benefit.

1.3 Option 2 – Third Party Emergency Response

This solution involves VTS seeking assistance from third parties (such as other pipeline operators, service and rental equipment companies etc.) to use their equipment and tools for emergency response and recovery.

This option also includes the Services and Goods agreement between APA Group and service companies such as TD Williamson, ProPipe and Team. The agreements ensures that these companies supply emergency response and recovery equipment and components to be deployed and sent to site with minimal costs and time expended for projects and emergency response.

This option does not apply to emergency pipe, vents and flares.

1.3.1 Cost/Benefit Analysis

The benefit of this option is that VTS can access the necessary equipment for emergency response and recovery purposes.

However, there are shortfalls with this option as this relies on the Third Party emergency equipment inventory. The shortfalls include:

- The equipment is not available at the time of need and are often stored overseas or are in use.
- Long lead times of the equipment can lead to delayed emergency response and recovery.
- The equipment may not be suitable for use (e.g. not been serviced, no certificates, inadequate pressure ratings etc.)

It is not recommended to rely on equipment owned by Third Parties as the shortfalls above can compound risks which can lead to unnecessary delays, costs and risks during emergency response. This can increase the risk of prolonged loss of supply and incident escalation.

1.4 Option 3 – Purchase Emergency Pipe and Equipment

As part of APA's national strategy APA is looking to maintain its long standing policy of maintained emergency pipe and equipment necessary for foreseeable pipeline incidents. By proceeding with this option, APA has confidence that management and personnel have the adequate pipe and equipment to perform emergency response and recovery operations in a timely and safe manner.

1.4.1 Cost/Benefit Analysis

The benefits that can be realised from this option are:

- It improves emergency response and recovery capability for the VTS as there is minimal reliance on Third Party equipment for these operations. As a result, there is less potential for delays in rectifying the asset following an emergency incident due to pipe and equipment being always available and fit for purpose.
- Newly purchased pipe and equipment will have documents provided which ensures that they comply with the current design standards and are safe to use for emergency response and recovery. The equipment will be up to date with the latest safety design requirements.
- The new equipment will have more readily available parts reducing maintenance costs to ensure that they are fit for purpose for emergencies in the long term.
- Currently other Victorian pipeline operators rely on APA under mutual support agreements allowing access to equipment, components and fittings. The purchase of this equipment will allow improved support across the Victorian gas industry.

1.5 Summary of Cost/Benefit Analysis

Table 4 below summaries the benefits of the three options explained in the previous sections as well as the associated cost estimates for each option.

TABLE 4: SUMMARY OF COST/BENEFIT ANALYSIS

Option	Benefits (Risk Reduction)	Costs
Option 1	• VTS is not required to purchase emergency equipment and pipe	All the risks detailed in section 4
Option 2	• VTS offsets CAPEX expenditure by leasing emergency equipment from Third Parties. • VTS does not require to store and maintain Third Party emergency equipment.	Less operational control and potential delays to emergency response. Unable to fully support Distribution systems through existing Emergency Support contracts Depending on the lease and replacement costs of equipment based from third parties. Long term cost greater than initial capital cost
Option 3	• VTS is self-reliant and has improved capability in emergency response. • Emergency pipe and equipment are always available • VTS owned emergency equipment is suited for VTS pipelines • Improved / effective support for mutual support agreements	Refer 1.5.4 Forecast Cost breakdown $7,620,000

1.6 Proposed Solution

1.6.1 What is the Proposed Solution?

Option 3 is the proposed solution to address the inadequacy of emergency pipe and equipment with a recommendation to procure replacement pipe and equipment as follows:

Emergency Pipe

To address the inadequacy of emergency pipe that is not fully compliant for existing pipelines the proposed solution is to purchase replacement pipe that meets the fracture toughness and grade requirements with the VTS pipelines. Once acquired the pipe will be hydrotested and stored to allow immediate and efficient installation following a pipeline emergency incident.

Hot Tap Equipment

To address the inadequacy of Hot Tap Equipment suitable for pipelines that have MAOP up at full CL600 pressure. The proposed solution is to purchase new equipment that have Maximum Working Pressure compatible CL600 pipelines.

Emergency Vent and Flare Stacks

As the vent and flare stacks may not be adequate for pipelines that have MAOPs at full CL600 and CL900 pressures, the solution is to conduct preliminary studies on plume dispersion and depressurisation rate for the range of blowdown scenarios in VTS as well as detailed cost estimation, design and fabrication of any new vent stacks required.

1.6.2 Why are we proposing this solution?

By selecting Option 3 as the proposed solution, VTS improves its capability to respond to emergencies within VTS as well as having the equipment to perform repair and recovery works on VTS pipelines that have MAOP equal to CL600 pressures (10,200 kPa). VTS will be in a satisfactory position for rectifying emergencies. Assets greater than CL600 will require reduction in pressure until the lower pressure rating of the equipment is achieved.

Additionally, unnecessary delays and complications are minimised during emergency response, resulting in a reduction in risk consequence as VTS maintains the ability to rectify emergencies in a self-reliant manner rather than relying on third parties to provide equipment which may not be available or suitable as detailed in Option 2.

By having the right emergency pipe at the right location, certified and maintained for the VTS, APA will be able to rectify pipeline repairs quickly and efficiently and not be impacted by long lead time for pipe which can delay the repair process and impact gas supply.

1.6.3 Consistency with the National Gas Rules

Rule 79(1)

The proposed solution is consistent with Rule 79(1) of the National Gas Rules and APA considers the expenditure to be:

- **Prudent** – The expenditure is necessary to maintain and improve the readiness in emergency response and recovery operations within VTS.

- **Efficient** – By acquiring the required emergency pipe and equipment, the long term costs will be minimised compared to utilising a third party.

- **Consistent with accepted good industry practice** – Addressing the risks associated with having inadequate equipment for emergency response in terms of quantity and suitability for assets within VTS is considered as good industry practice. The Australian Standard AS2885.3 Section 11.2, *Emergency Response Plan (ERP)* the pipeline operator requires "adequate equipment, pipe and fittings fit for the intended purpose and readily available at all times, complete with traceable material test certificates".

- **Achieves the lowest sustainable cost of delivering pipeline services** – The acquisition of the required emergency pipe and equipment will ensure that the risks of emergency situations is reduced to as low as reasonably practical and maintaining reliability and security of supply to our customers and ensuring safety of people and the environment.

1.6.4 Forecast Cost Breakdown

Below is a cost breakdown for the emergency response and recovery equipment, fittings and tools acquired in accordance with the proposed solution.

TABLE 5: FORECAST COST ESTIMATE (ESCALATED)

	Hot Tap Equipment	Emergency Response Pipe	Flare	Vent	Total
Internal Labour	$30,000	$95,000	$50,000	$30,000	**$205,000**
Materials	$6,200,000	$125,000	$600,000	$240,000	**$7,165,000**
Contracted Labour		$250,000			**$250,000**
Other Costs					
Total	**$6,230,000**	**$470,000**	**$650,000**	**$270,000**	**$7,620,000**

Emergency Pipe and Equipment

Table 5 above is a forecast cost estimate for acquiring emergency pipe and equipment. The unit costs for these items are based on pricing provided by various suppliers including Edgen Murray and TD Williamson. The quantity of this pipe and equipment is based on the quantity of current inventory not fit for purpose as well as new equipment required for pipelines that have MAOP up to CL600 pressures. The internal labour rates are based on approximate hourly rates of various occupational groups, and freighting costs are based on the approximately hourly rate for the freight truck hire and the journey time.

The cost estimate for the labour rate of the vent and flares includes preliminary studies such as plume dispersion and depressurisation rate for venting CL600 and CL900 pipelines as well as design, fabrication and commissioning of new vent stacks. The fabrication costs of the vent stacks are based from contractor price estimates (Zeeco and Gasco).

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