

## Business Case – Capital Expenditure

# Dandenong Fire Water

Business Case Number 223

## 1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

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<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>	<p>APA received formal notification by the CFA (letter 13 September 2012) expressing their concerns with the fire service provided for the protection of offices and associated buildings. The system failed the requested pressure test of system to a minimum of 1400kPa on the 17th September 2012 resulting in request for an upgrade of the fire system 'as a matter of urgency'.</p> <p>This is the second stage of the upgrade required due to the Dandenong Fire Mains being non-compliant and no longer in a serviceable condition. The first stage was completed in 2015.</p>
<b>Options Considered</b>	<p>The following options have been considered:</p> <ol style="list-style-type: none"> <li>Option 1: Do Nothing Option</li> <li>Option 2: No alternative identified</li> <li>Option 3: Replace stage two of the Dandenong fire mains</li> </ol>
<b>Estimated Cost</b>	\$324,178
<b>Consistency with the National Gas Rules (NGR)</b>	<p>The replacement of these assets complies with the new capital expenditure criteria in Rule 79 of the NGR because:</p> <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>	<p>Stakeholders relates to this project are:</p> <ul style="list-style-type: none"> <li>Adjacent Major Hazard Facilities; BOC Gases and Elgas</li> <li>Tenants of other buildings at 120, 150 and 180 Greens Road, Dandenong</li> <li>Country Fire Authority</li> <li>WorkSafe Victoria (Authority for Major Hazard Facilities)</li> </ul>

## 3 Background

The APA fire system has two independent hydrant systems. One is supplied by an onsite fire pump and pond while the other is supplied directly from the street mains. This business case relates to the remaining upgrade of the APA mains fire service (not the pumped system). From this point forward, referring to the mains fire service as the Dandenong Fire Water System (DFW).

## DANDENONG FIRE WATER

In FY14/15 APA upgraded approximately 1,100m of the DFW around the 180 Greens Rd Building and leased buildings TDW and Lend Lease. The upgrade included new pipework, hydrants, booster assembly and connection into existing hose reels. The system was upgraded around the site buildings a priority and the battery limit being fire service isolation valve FSIV-012 adjacent to ELGAS.

The DFW is fed from two locations; one from the new 200mm tapping at the 180 Greens Rd entrance, the second is a 150NB line from Frankston-Dandenong Rd.

This business case covers the remainder of the DFW upgrade which covers the service from the 150NB booster at Frankston-Dandenong Rd supplying the Dandenong City Gate, top up supply to the fire water pond, Dandenong Terminal Station, through to the newly installed FSIV-012 completing the upgrade of the dual supply site.

The system is no longer fit for purpose and requires an upgrade 'as a matter of urgency' to ensure safety to personnel and protection of assets in a fire incident.

The remaining DFW that has not been upgraded cannot reliably supply fire water during an emergency, and cannot be boosted by the fire brigade due to the interconnected domestic supply fittings. If this section of the DFW is pressurised by booster pumps to supply fire water failure of the pipe or domestic fittings is likely to occur during the boost. The result of this is insufficient flow of water to the assets that require protection from fire.

The DFW is an underground piping system which was constructed when all the buildings, city gate, LNG plant and other major hazard facilities were constructed at Dandenong. At the time of construction, the service was installed a combined domestic and fire service supplied from the fire water mains which cannot be suitably tested and maintained as a fire service.

The DFW has burst on several occasions due to ageing of the existing underground piping. The system failed the scheduled hydrostatic test in August 2012.

APA received formal notification by the CFA (letter 13 September 2012) expressing their concerns with the fire service provided for the protection of offices and associated buildings. The system failed the requested pressure test of system to a minimum of 1400kPa on the 17th September 2012 resulting in request for an upgrade of the fire system 'as a matter of urgency'.

The installation will include a new booster assembly, new pipework (where required), new hydrants and pressure regulating valves. The upgrade will also reconfigure the non-compliant combined fire/domestic service that feeds the LNG facility to a domestic water line only with the removal of the non-compliant hydrants. Following a consultant's study of the water supply of the fire hydrants and monitors performed in February 2016, it was agreed that the LNG facility can be solely supplied by the pumped service hydrants and monitors.

The DFW consists of many hydrants, boosters, connection points and a few kilometers of underground pipe to service the multiple assets that rely of the DFW for fire water. For this reason, the project to replace the DFW efficiently and from a risk based perspective the work was segregated into two stages. Stage one was completed in 2015.

This business case is for stage two to complete the upgrade.

## 4 Risk Assessment

TABLE 3: RISK RATING

Risk Area	Risk Level
Health and Safety	Moderate

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Environment	<b>Negligible</b>
Operational	<b>Moderate</b>
Customers	<b>Low</b>
Reputation	<b>Moderate</b>
Compliance	<b>Moderate</b>
Financial	<b>Negligible</b>
<b>Final Untreated Risk Rating</b>	<b>Moderate</b>

Depending on the location and time of year the supply to several thousands of consumers could be affected.

## 5 Options Considered

### 5.1 Option 1 – Do Nothing

- The Do Nothing option is to maintain the existing system and permit substandard performance during an emergency.
- The Country Fire Authority has written to APA demanding system improvement after the failed test in 2012.

#### 5.1.1 Cost/Benefit Analysis

- There are little benefits other than delayed capex from the Do Nothing option.
- The costs of the Do Nothing option could be penalties for failing to comply with a directive from a statutory authority and the consequence escalation from a large fire.

### 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 alternative identified	
Option 3	Replacement of final stage of DFW	\$324,178

### 5.3 Proposed Solution

#### 5.3.1 Replacement of Stage Two DFW

The second and final stage of DFW replacement will require the following

- Approximately 250m of fire main replacement and associated valves
- 1 booster replacement

## DANDENONG FIRE WATER

- 3 new hydrant connections
- 1 pressure regulating valve to the pond supply
- Several hydrant disconnections from existing domestic water/fire water system
- Reconfiguration of the mains into the LNG facility to a domestic service only, including connection of the new domestic water line into the mains that currently feeds the LNG facility

### 5.3.2 Why are we proposing this solution?

The remaining DFW that has not been upgraded remains non-compliant with current standards. In addition the service is not capable of being boosted effectively during and emergency.

The CFA's letter requiring APA to rectify the DFW remains in force.

The solution is effective and efficient as it utilizes much of the existing piping as a domestic water service only, and installation of new fire water piping where required achieving a reliable dual supply mains fire service. This approach will create a DFW with an asset life equivalent to that of the assets it is intended to protect whilst reducing the cost of maintaining domestic water to the buildings.

### 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 contractors in a safe and cost effective manner. The expenditure will be undertaken consistent with the APAP 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 the unacceptable condition of fire dousing systems 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

The cost estimate has been determined from the actual costs incurred in the first stage of works. Those actual costs are an excellent indicator of future costs as the environment is similar, permit to work conditions similar and construction contractor selected from competitive tender.

**TABLE 5: PROJECT COST ESTIMATE,**

	Total
Internal Labour	\$92,622
Materials	\$0
Contractors	\$231,566

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Other Costs	\$0
<b>Total</b>	<b>\$324,178</b>