Business Case – Capital Expenditure

HMI ClearSCADA Upgrade

Business Case Number BC264 AA23-27

1 Project Approvals

TABLE 1: BUSINESS CASE – PROJECT APPROVALS

Updated By	Adam Newbury	Asset Lifecycle Specialist, Asset Management
Cost Updated By	Prasoon Premachandran	Victorian Team Lead Project Delivery, Engineering & Planning
Reviewed By	Adam Newbury	Asset Lifecycle Specialist, Asset Management
Approved By	Daniel Tucci	Victorian Asset Manager, Asset Management

2 Project Overview

TABLE 2: BUSINESS CASE – PROJECT OVERVIEW

Description of Issue/Project	**The project can be briefly described as:** • **Human Machine Interface (HMI) software on existing sites is not compatible with APA standard, the software is installed in standard computers and due for replacement.** • **Maintenance technicians and engineers, used for diagnostics and plant re-instatement after shutdown.** • **Failure of HMI computer results in inability to fault find or re-instate the plant after shutdown, resulting on extended duration of the outage.** • **A successful solution will provide standardized HMI equipment and increased reliability of the HMI.**
Options Considered	**The following options have been considered:** **Option 1: Do Nothing Option** **Option 2: Upgrade to Local HMI's to Clear SCADA by schedule**
Estimated Cost	**$720,000**
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 following are affected stakeholders for delivery of the project:** • **AEMO** • **Transmission Operations Personnel**

Background

Project resubmitted – ongoing program of work

HMI systems are used to monitor, maintain assets, re-instate plant after shutdowns and at times operate the Victorian Transmission System. This system is critical to being able to monitor the performance of assets and to undertake an initial diagnostics of asset faults.

This business case is to replace the HMI software and PC hardware at the four remaining locations (as listed below) to align with national business strategy for a common SCADA platform across the APA business and improve reliability of each HMI by installation of more robust PC hardware to run the HMI software.

CY23-CY27 Sites

- Gooding Compressor Station (GCS)
- Springhurst Compressor Station (SCS)
- Euroa Compressor Station (ECS)
- Iona Compressor Station (ICS)

CY18-CY22 Sites

- Brooklyn Compressors Station (BCS)
- Brooklyn City Gate (BCG)
- Wollert Compressor Station (WCS)
- Wollert City Gate (WCG)
- Longford (LMS)

Primarily the reason for this capex is to replace the end of life equipment that is the HMI. The software is run in standard PC hardware which is subject to the lifespan and failure rates of standard desktop PCs. The existing APA HMI systems at these sites utilises 'iFix' software and requires an ongoing knowledge base to maintain the software and make upgrades as required. Aligning the new HMI systems to Clear SCADA removes the need for 'iFix' software and will allow the sites to be in the common APA standard ClearSCADA platform.

The requirement of ClearSCADA is detailed below:

The National SCADA Blueprint released in November 2009, recommended the following:

- Eventual migration of all SCADA and HMI systems to Clear SCADA.
- Establish a national scalable Clear SCADA licence and maintenance agreement for existing and future APA Group requirements.

3 Risk Assessment

The risks of retaining the current HMI systems are:

- Increased operational risk associated with the support of different platforms and conventions.
- Increased risk of outage due to requirement for more frequent upgrades of PC hardware.
- Reduced maintainability due to a reduction in available system expertise.
- Reduced monitoring and data available to National SCADA system due to inability to interface to site HMIs.

These risks are reduced by:

- Using a standard proven system platform (hardware, software and network architecture) within APA, allowing seamless interface between site HMIs and national SCADA platform.
- Installing the HMI software in more robust PC server hardware, also allowing easier remote support to the local technicians when required.

TABLE 3: RISK RATING

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

4 Options Considered

4.1 Option 1 – Do Nothing

Continue using the existing iFix HMI system and maintain the necessary in-house expertise to support the systems. This is not considered an acceptable solution as APA's national standard is Clear SCADA and by upgrading these sites will ensure a standard approach across all sites.

4.1.1 Assessment

The costs involved with this option is utilising a known system and not going through changes. Considering the national standard is Clear SCADA across all sites at APA, it is important to change the SCADA system to the national standards.

4.2 Option 2 – Upgrade to Clear SCADA by schedule

This option permits a scheduled approach by upgrading the system at critical sites first. By doing one site a time will ensure that the project is executed more efficiently and can take forward its lessons learnt to the remaining consecutive sites.

4.2.1 Assessment

The costs involved with this option are that the expenditure can be programmed and treated as ongoing work. As sites are upgraded the risk is limited to those that are still waiting Clear SCADA upgrade. This will ensure a more efficient solution.

4.3 Summary Assessment

The following table summarises the options.

TABLE 4: SUMMARY

Option	Benefits (Risk Reduction)	Costs
Option 1	Do Nothing	**$ 0**
Option 2	Upgrade to Clear SCADA by Schedule (preferred option)	**$ 720,000**

4.4 Proposed Solution - Upgrade to Clear SCADA by schedule

The scope of the projects will be to upgrade to Clear SCADA by schedule. The upgrade will be done by identifying the critical sites and completing them first. The benefits of this solution includes:

- Identification of critical site SCADA systems
- Good balance between capital expenditure and risk
- Efficient solution to complete one site at a time to bring forward lessons learnt to consecutive site upgrades.

TABLE 5: LOCATION SUMMARY

Location	Status	Estimate	Year
Longford Meter Station (LMS)	Complete	$100,000	2020
Brooklyn Compressors Station (BCS)	Inflight	$180,000	2021
Brooklyn City Gate (BCG)	Inflight	$120,000	2021
Wollert Compressor Station (WCS)	Inflight	$180,000	2021
Wollert City Gate (WCG)	Inflight	$120,000	2022
Gooding Compressor Station (ECS)	**Pending**	**$180,000**	**2023**
Springhurst Compressor Station (SCS)	**Pending**	**$180,000**	**2024**
Euroa Compressor Station (ECS)	**Pending**	**$180,000**	**2024**
Iona Compressor Station (ICS)	**Pending**	**$180,000**	**2025**

4.4.1 Consistency with the National Gas Rules

- Prudent – The expenditure is necessary in order to improve the reliability of operation and is of a nature that a prudent service provider would incur.
- Efficient – The new Clear SCADA systems will be the standard throughout APA, and more effective monitoring can be achieved.
- Consistent with accepted and 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 Standards and the Occupational Health and Safety Act

- 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 the ability to recover from a supply fault

4.4.2 Forecast Cost Breakdown

TABLE 6: PROJECT COST ESTIMATE,

	Total
Internal Labour	**$72,000**
Materials	**$288,000**
Contracted Labour	**$360,000**
Other Costs	**$ 0**
Total	**$720,000**

Assumption:

The cost is based on the In-Flight and completed project actuals. Reference projects are the Brooklyn, Wollert and Longford HMI Upgrades.

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