

ELECTRONIC SWIPE CARD STAND PIPES – MODERNISATION OF A WATER SUPPLY ICON



Paper Presented by:

Chris Baker

Author:

Chris Baker, Senior Project Engineer,

GWM Water



*79th Annual WIOA Victorian Water Industry Operations
Conference and Exhibition
Bendigo Exhibition Centre
31 August to 1 September, 2016*

ELECTRONIC SWIPE CARD STAND PIPES – MODERNISATION OF A WATER SUPPLY ICON

Chris Baker, *Senior Project Engineer*, GWMWater

ABSTRACT

As a result of the extended dry conditions experienced during 2014 and 2015, many farmers in the Wimmera who rely on surface water dams ran out of water. In December 2015, the Victorian Government provided funding for a number of drought relief projects, including Electronic Swipe Card Stand Pipes (ESCSP) in GWMWater's region.

Funding of \$420,000 was provided to supply and install 14 ESCSPs in strategic locations across the region to provide farmers with 24/7 access to water via water carting. A trial ESCSP had been installed 6 months previously in the Landsborough area, with the success of this trial enabling the efficient roll-out of the additional ESCSPs at a known cost.

The new ESCSPs generally replaced existing 'manual' Stand Pipes. Many of the old stand pipes had OH&S issues such as 'top fill' connections. They also relied on the water carter to record the date and consumption at the nearby corner store or honesty box. This system was problematic with records and subsequent billing poorly accounted for.

The new ESCSPs allow 24 hour access to water carting in the drought affected rural areas for landowners that are not connected to the water supply network.

1.0 INTRODUCTION

The Landsborough Valley Pipeline Project was commissioned in July 2015 and transfers water from the Stawell Urban storages to the Landsborough Valley Vignerons (Wine Grape Producers), as well as many smaller entitlement (stock and domestic) customers on the way. The trial ESCSP is located along this pipeline approximately 15km east of Stawell. The trial was undertaken to address the following:

- Removes need for customer to manually record water consumption at nearby corner store or honesty box.
- Customers do not need to arrange for a Metered Hydrant.
- No padlock / key system required.
- Discharge pipe is at waist height. Water trucks need to have bottom fill connections. Removes OH&S issues of truck drivers climbing on top of their truck.
- Consumption of water sent electronically to GWMWater Accounts for Billing.
- GWMWater Service Delivery (Operations) personnel are not required to monitor or maintain the new ESCSP. Reduced strain on Operational resources.



Figure 1: *Landsborough Valley pipeline trial ESCSP and nearby solar array*

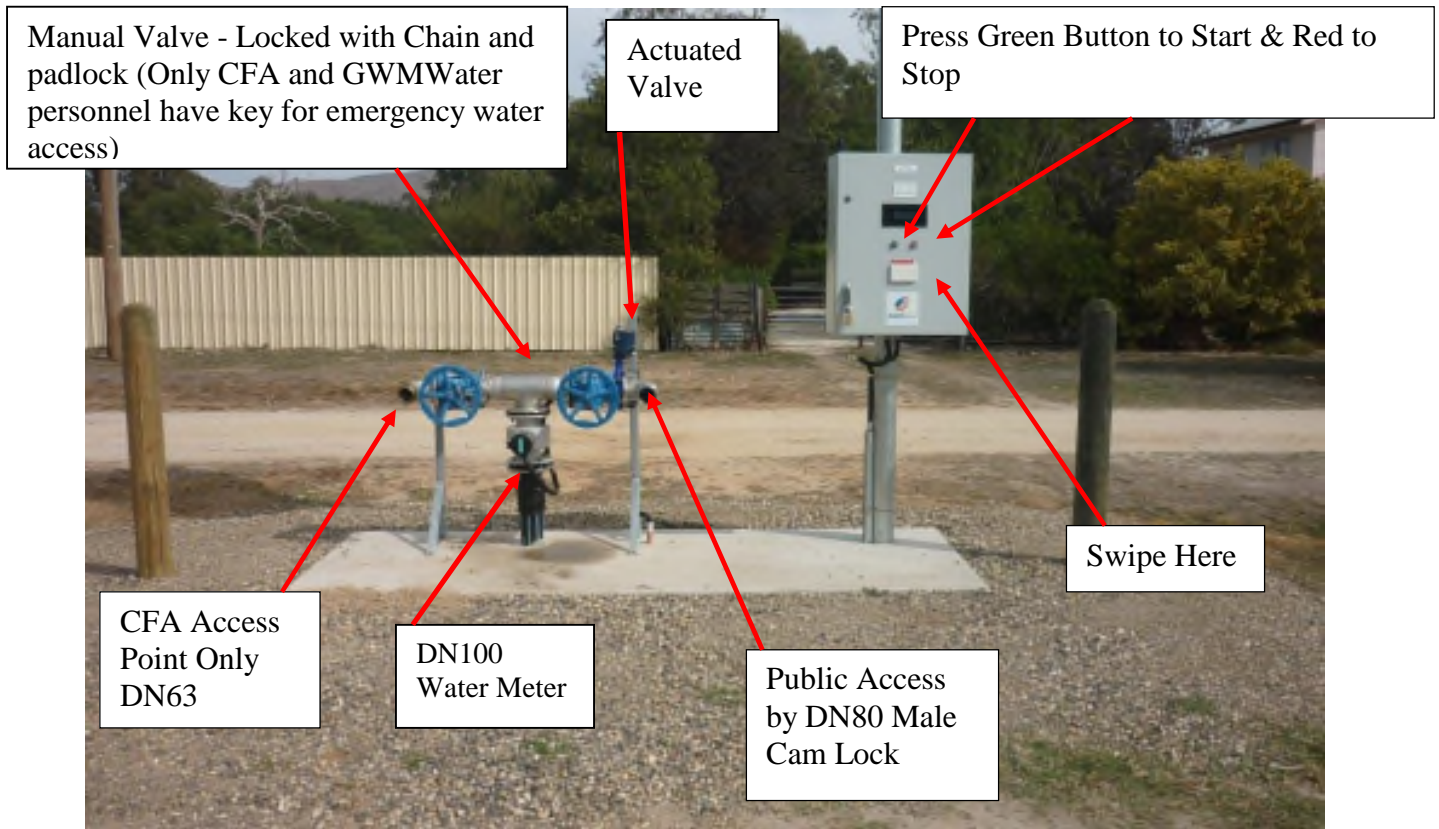
The local community (in particular the Northern Grampians Shire) were proactive in adopting the new technology.

2.0 DISCUSSION

The system operates with each customer being provided with an Electronic Swipe Card. The cards are approximately the size of a Credit Card and cost the customer \$70 (including GST) each. When they swipe the reader on the electrical cabinet, the system recognises the customer. The customer can then start and stop the water flow with the push button controls on the electrical cabinet which controls the actuated valve. The actuated valve is designed to open and close slowly to prevent water hammer issues.

The Water Meter records the consumption in kilolitres and transfers the information into the Data Logger which is located in the electrical cabinet. This information is then sent via a modem over the NextG Mobile Phone Network to a local Horsham based Contractor (CHS Group) who designed the control system and constructed the ESCSPs on behalf of GWMWater. The information is logged onto their database and then sent to GWMWater for Billing and Water Consumption recording. Customers are sent out water accounts on the usual 3 month billing cycle.

Some ‘off the shelf’ automated stand pipes were investigated with limited information found to be available. A tailor-made solution that utilised a local contractor to design, construct, commission and maintain these facilities was a direction that we believe best suited our requirements.



Operating Instructions:

- Step 1. Swipe Card on front of Cabinet
- Step 2. Press Green Button to start
- Step 3. Open Manual valve slowly clockwise to required flow rate (Actuated Valve will operate automatically)
- Step 4. Press Red Button to Stop (Actuated Valve will close) & Close Manual Valve
- Step 5. Disconnect Cam Lock
- Step 6. Note Usage (Optional – for own personal records)

Figure 2: *Operating Instructions – ESCSP (Location - Elmhurst)*

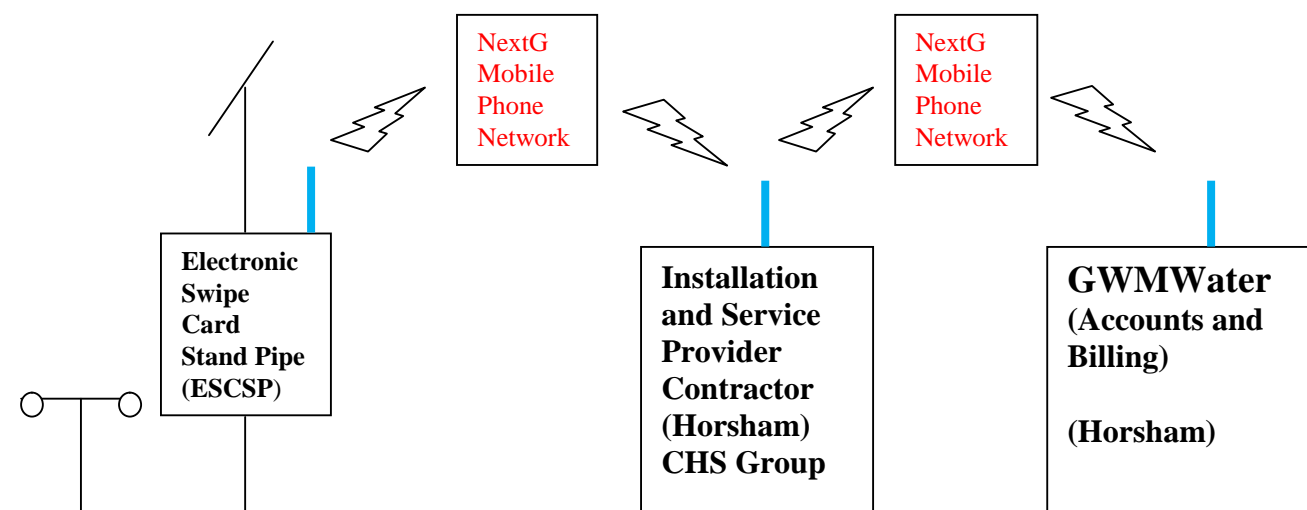


Figure 3: *Schematic of Information Transfer*

2.1 Costings

CHS Group has an ongoing contract with GWMWater for the collection and transferral of water consumption information, as well as servicing and maintenance of the ESCSPs (Cost: \$20 + GST / month / ESCSP).

ESCSP Capital Cost: ~\$30k each site.

The water charge to the customer is currently \$2.28/kL (incl GST) in accordance with GWMWater's standard charges approved by the Essential Services Commission.

As of early May 2016, there had been 17,000 kL of water go through the 14 No. ESCSPs.

2.2 Savings to Operations Resources

The work load on GWMWater Operations staff monitoring and 'policing' the manual stand pipes has reduced considerably. They are no longer contacted to allow access for water carting or to check who and when water was taken. The system is managed remotely, with access only to customers that have a Swipe Card.

2.3 Details of the ESCSP

Each ESCSP assembly has two (2) outlets:

1. Standard DN80 Male Camlok for Public (Customer) Access. This outlet is connected to an actuated valve, control system, and billing system.
2. DN63 CFA Male Fitting. This fitting is connected to a manual valve which has a padlock that has had the key issued to the relevant GWMWater and CFA personnel for emergency use.

The ESCSPs are generally solar powered.

The initial roll-out of the ESCSPs was in the following townships: Great Western, Willuara, Lake Bolac, Stawell, Ararat, Westmere, Wickliffe, Elmhurst, Streatham, Apsley, Kaniva, Moyston, St Arnaud, and Pomonal.

As of the end of 30 June 2016, there has been 210 Electronic Swipe Cards issued.



Figure 4: Location of ESCSPs within GWMWater's operating region

2.4 Lessons Learned

The main issues found with the initial roll-out of the ESCSPs were as follows:

- There was a reasonable amount of time required to troubleshoot the integration of data into the GWMWater Billing System and arranging for the subsequent sending out of accounts to the mostly new customers.
- On some of the ESCSPs that draw on raw water, yabbies and debris were being transferred through the ESCSP and fouling the electro-mechanical water meter turbine impeller. Several sites were upgraded to Magnetic Flow Meters. For any future ESCSPs would recommend installing a Magflow as the default Water Meter.

3.0 CONCLUSION

The roll out of the Electronic Swipe Card Stand Pipes has enabled the effective automation of Stand Pipes in the GWMWater region. The main benefits include:

- Provides an effective drought relief system for land holders to cart water for primarily agricultural purposes.
- An effective way to monitor and acquire revenue from the sale of water
- The filling point at 'waist height' allows for the effective operation from an OH&S perspective.
- Reduced work load for GWMWater Operations Staff
- Alleviates the need for the typically mobile metered hydrants issued to customers and the subsequent management required.

4.0 ACKNOWLEDGEMENTS

Wish to thank the following people who assisted with the project and contributed to the Paper:

GWMWater - Graeme Dick, Darren Raeck, Peter Cooper, and Stephan LeRoux

CHS Group – Ash Hopper