

BrickHouse inspected the pump station with the understanding of installing a Wet Well Wizard (WWW) into one of the pre-chambers prior to one of the pump stations. This was to assess the performance of the WWW on two identical pump stations on the same site. The system brought to site for the trial was selected based on the installation being in the pre-chamber location (a single ejector with a small scale blower).

During the installation (10th March 2020), it was determined that there would be more beneficial long-term impact if the WWW was instead installed within the pump station chamber. Both pump station chambers had a 300mm FOG layer on top. When installing the WWW, it took considerable effort to break this layer and install the equipment.

Due to the change in installation location, the WWW used for the initial trial was undersized for the larger PS. For a single PS this size (considered as a medium sized PS), two ejectors fed from a single blower, for each PS side, would have been recommended (total recommended would be four ejectors for the complete PS, with a suitably sized blower or a dedicated blower each side).

BrickHouse installed the smaller WWW system into PS #1, with the view to upgrading later. This was a small blower and a single ejector. The performance of this unit exceeded expectations, as shown in both the photos of the air valve and the PS 1 dated 26th March 2020 (prior to an upgrade).

On the 26th March 2020, BrickHouse upgraded the system with a blower of twice the capacity and added an ejector to PS #2. This system is more suited to the single pump station, however the upgraded system was split between both PS's. TCC was satisfied with the performance of the small system and the benefits that they have gained.

Air valve cleaning

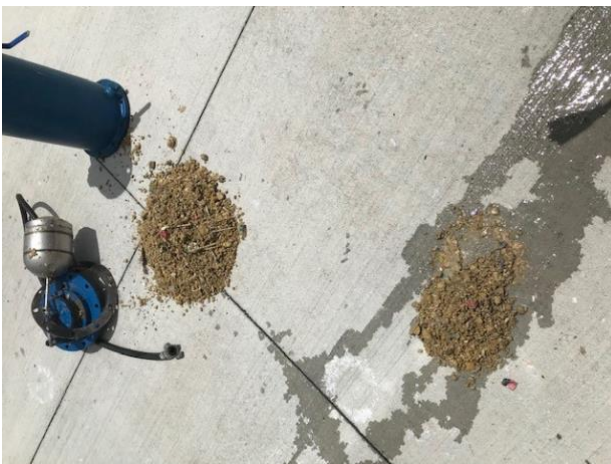


Photo from Air valve cleaning 9th January 2020. Cleaning is performed fortnightly. This is the typical 'Pre-WWW' FOG removed from the valve

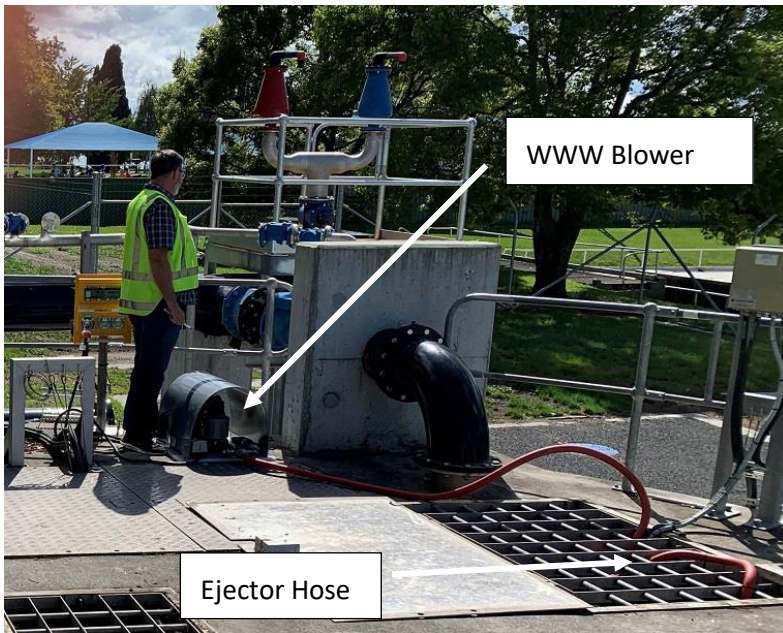


Photo from Air valve cleaning 19th March, 9 days after WW installation. This is the typical 'Post-WWW' FOG removed from the valve

Initially, the TCC operation staff would service the pressure main air valves once per fortnight, as illustrated in the left photo above. The deposits on the ground is the transferred FOG being pumped from the PS and trapped within the air valve. Following 9 days of operation of the initial WWW system, the air valve was removed for service again. The amount of FOG has been significantly reduced and operations are now servicing the valve once every month.

The air valves are a critical asset for TCC and protects the operation of the PS and the siphon system.

Wet Well Wizard Installation, above the pump station



**Wet Well Wizard Temporary Installation:
10th March 2020**

The initial installation included a small blower unit and a single ejector into the one side of the MPPS. The blower is a 3-phased unit.

The system was upgraded on the 26th March 2020 due to the positive performance of the system. The blower rating was doubled, and a second ejector was added to the system. One ejector was placed into each pump station compartment.

This photo shows the initial temporary installation of the blower and the ejector in PS #1.

Pump Station 1 – Installation date 10th March 2020

The following photos represent the changes regarding FOGs production within the pump station #1. Observations are as follows:

- At installation, the FOG layer was 300mm. It took up to 30 attempts to drop the ejector through the FOG layer;
- Within a space of the first day, the WWW had already made major improvements to the reduction of FOGs;
- They ejector location was changed on 26th March (at the time of increasing the blower size and placing another ejector into PS #2);
- FOG from the wall surfaces is reducing;
- The longer the ejector was in the PS, the more impact it was having. Day 88 illustrates approximately a 99% FOG removal from the PS.



10th March 2020 (day 0)



11th March 2020 (day 1)



12th March 2020 (day 2)



16th March 2020 (day 6)



26th March 2020 (day 16)



14th April 2020 (day 35)



30th April 2020 (day 51)



4th June 2020 (day 88)

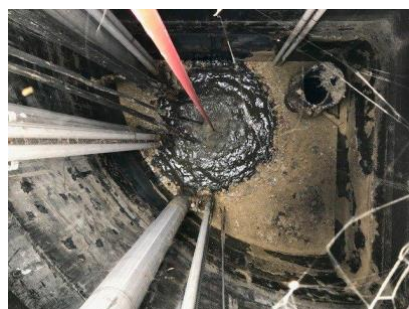
Pump Station 2 – Installation date 26th March 2020

The following photos represent the changes regarding FOGs production within the PS #2. Observations are as follows:

- At installation, the FOG layer was 300mm;
- FOG cleaning took slightly longer for PS #2 as it did for PS #1;
- FOG from the wall surfaces is reducing;
- By day 40 after installation, approximately 99% of FOG had been removed.



26th March 2020 (day 0)



14th April 2020 (day 19)



30th April 2020 (day 35)



5th May 2020 (day 40)



4th June 2020 (day 70)

Closing Comments

The recommended installation for these two pump stations would be to have 2 ejectors connected to a single blower for each PS. This would allow for better performance and to be able to handle the sudden influxes of FOGs from the restaurant sector or other sources.

TCC had changed the location of the ejector within the trial period for PS #1. This improved the removal of the PS. As there were obstructions within the PS, the change of location appeared to clean the surface more effectively.

While the system is undersized, TCC is very satisfied with the current result and performance. It has reduced maintenance activities and removed approximately 99% of the FOG within the PS. While there might be periods of high FOG entering the PS's, the WWW is able to keep on top of the cleaning and removal performance.