



# ISSUE PAPER

## Transportation & Environmental Services

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**Budget Year:** 2026

**Issue Paper No.:** ENV-02-26

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**Description:** **WPCP Scada Review and Upgrade (Replacement)**

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**Purpose:**

**BE IT RESOLVED THAT** Council receive budget issue paper ENV-02-26 for information.

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**Background:**

**Process control** – Automated control of the Water Pollution Control Plant (WPCP) is accomplished by a Supervisory Control and Data Acquisition (SCADA) computer system. This SCADA system controls all the process related to mechanical devices including electrical. Chemical dosing is also controlled by SCADA. The SCADA system was updated in 2017, improving and allowing for better collection, interpreting, and trending of data.

The SCADA system allows the operators to control, monitor, trend and report all aspects of wastewater treatment processes (see below).

- Influent pump station pump control,
- Aeration tank blower control,
- Groundwater pump station pump control,
- Alum injection system control,
- RAS / WAS pump & valve control,
- Scum pumping station pump control,
- Effluent pumping station pump control including chlorination and dichlorination
- Monitoring of various other alarms and process parameters including flow monitoring

The SCADA process control system ultimately filters commands that control pumps, process interlocks and alarms that alert operators when equipment malfunctions or processes fail. The system also monitors and tracks large volumes of data that are used for trending, process control and compliance reporting. The servers that make up the SCADA system operate 24/7 and are rarely offline.

Typically, SCADA systems have a life cycle of 5 to 7 years. In 2017 the Scada computers themselves were replaced along with some limited control logic changes.

### **Current Conditions**

One of the issues that the operators and, our system integrator have been dealing with over the years, is the fact that the control language used in 2011 (structured text code) is obsolete and contains security lockouts installed by the original programmer preventing our integrator from fixing programming flaws that were part of the original SCADA programming. These issues have resulted in thousands of dollars being spent over the years trying to maintain and get the SCADA control logic to work as intended. The integrator has been able to solve some of the control issues but due to the original security lockouts, they cannot fix all the outstanding control issues. With out this system review and upgrade these issues will continue to plague plant control, not to mention the operators who must respond after hours, often taking over manual control to get the effected process back online.

### **What Staff are Proposing (the solution).**

A full review of the Programable Logic Control (PLC) and Human Machine Interface (HMI) which is a user interface that connects a person to a machine or system, allowing them to interact with and control it. It acts as a bridge, displaying information from the machine and receiving input from the operator. Our System integrator knows the how plant runs. Along with all the existing electrical equipment and wiring and its operation better than anyone since they have been dealing with the issues for several years now.

1. Project management and administration
2. Review of existing site, operational tests and discussions on known issues, wiring and code review.
3. Development of updated PCN and updated drawing set showing any potential wiring repairs/changes
4. Reprogramming of PLC from scratch using latest standards (moving from existing structured text to more familiar ladder logic)
5. Updating HMI to match newer PLC modules, upgrading iFix to latest version (including the integration of the UV system)
6. Replacing old SCADA servers and historian and upgrading Microsoft server version
7. Testing and updating documentation
8. Full recommissioning of the plant and all automation

9. Network updates to integrate any changes to equipment
10. Supply of new set of as-recorded panel drawings, P&ID and PCN

**Consultations/Options:**

Tyler Dupp Eramosa/CIMA Engineering, Ted Joynt Overall Responsible Operator (ORO), Phil Kelly Operator in Charge (OIC). Tim Gilligan, Andrew Harper (Operator) OIC

**Financial Impact:**

\$325,000.00 – This will be funded from the water/wastewater user rates & reserves.

**Risk Considerations:**

Should this review, and upgrade, be delayed or postponed the present operating issues will continue or get worse, costing more money to be spent on (for the most) trying to maintain a flawed control system.

There is the potential for environmental issues to arise should the existing control system become such that wastewater treatment process fails to be SCADA controlled, which could result in manual operation of the plant which means an operator onsite 24/7 for an undetermined length of time until SCADA control is resumed.

**Impact to Member Municipalities/Partners:**

none

**Alignment with the Strategic Plan Pillar:**

Growth Through Diversity

Ensuring that infrastructure assets meet the emerging needs of our growing community

Environmental Resilience

Invest in environmentally conscious infrastructure and municipal building efficiencies

**Submitted by:** \_\_\_\_\_

**Services**

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