

To: John Scherer and Claire Ohrling
Township of East Zorra-Tavistock

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Aquafor Beech Limited

Subject: Council Update Memo

Aquafor Beech Limited was retained by the Township of East Zorra-Tavistock in October 2023 to complete a Stormwater Management Master Plan (SWM-MP) for the Village of Innerkip. The purpose of this memo is to provide a summary of the work completed to date and to identify next steps for the project.

Summary of Work to Date

Linear Storm Infrastructure Condition Assessment

CCTV had previously been completed for some of the storm sewer network within Innerkip; as part of the SWM-MP, CCTV was completed for the remaining network, consisting of approximately 7km. In general, the storm sewer network is in good condition, with some minor incrustation or deposits, and a small number of intrusions or obstructions.

Stormwater Management Facilities Assessment

There are two stormwater management facilities (SWMF) located in Innerkip. Pond 3 is a constructed wetland located on Jonker Street, and Pond 4 is a wet pond located on Burton Street. Both SWMF were inspected on December 12, 2023. Key findings and recommendations from this assessment include:

- The permanent pool water level is not being maintained in Pond 3. It is unlikely that the pond is contributing to basement flooding issues in the neighbourhood, as bedrock elevations appear to be lowest at the pond, and are at higher elevations through the neighbourhood. It is recommended that the Township investigate why the permanent pool water level is not being maintained in Pond 3, including:
 - Install water level data loggers for a period of 6-months to 1-year to continuously monitor pond water levels.
 - Install a monitoring well adjacent to the pond, and instrument with a water level data logger, to continuously monitor groundwater levels and compare to surface water levels.
 - Complete infiltration testing in several locations through the main cell of the pond.Depending on the results of the above investigations, if it is found that water is entering the pond and then infiltrating, the Township could consider retrofitting the pond. Retrofits could include:
 - Construction of a liner so that the facility can properly operate as a wetland with a permanent pool; or
 - Retrofit the facility to be an infiltration facility.

Either alternative would require a retrofit design study and amendments to the Township's CLI ECA.

- Dense vegetation growth was observed throughout Pond 3, which could limit its capacity during large rain events. It is recommended that the Township implement a vegetation management plan at Pond 3 to manage the dense vegetation growth.
- Woody vegetation was observed in the outlet channel of Pond 4. It is recommended that the Township complete operations and maintenance activities in the outlet channel of Pond 4 to remove the woody vegetation and restore capacity in the channel.

Stormwater Monitoring Program

During the spring through fall of 2024, Aquafor has been completing a field monitoring program, consisting of the following:

- Water quality monitoring, consisting of four wet-weather samples and three dry-weather samples. Monitoring locations were selected to provide representative coverage of Innerkip. To date, sampling during three wet-weather events and two dry-weather events have been completed.
- Continuous flow monitoring at two storm sewer locations, plus three additional provisional monitoring locations. The results of the flow monitoring will be used to calibrate and validate the new storm sewer model being developed (see below).
- Rain gauge monitoring, consisting of the installation of a three-season tipping bucket rain gauge so that local rainfall data is available for model calibration and validation.

Model Selection and Development

A PCSWMM model is being developed to model the storm sewer system (included all storm sewers 200mm or greater) as well as the major overland flow system within Innerkip. As part of the development of this model, a number of data gaps were identified, including issues with missing storm sewer inverts and diameters, as well as questions regarding storm sewer connectivity. While Township staff were able to fill many of these data gaps, additional field investigations have been completed to further characterize field conditions.

Public Open House

The first of two public open houses was held on October 23, 2024 at the Innerkip Community Centre. The purpose of this open house was to present the project to the public, and to obtain initial feedback regarding known stormwater issues within Innerkip. The open house was well attended, with over 20 residents attending.

Next Steps

With the field investigations wrapping up, Aquafor will consolidate the results of the investigations to finalize the Study Area Characterization Memo, as well as finalize the model development, including calibration and validation. Multiple model scenarios will be simulated to identify vulnerabilities within Innerkip's storm network.

A long list of alternatives will be developed, targeted towards specific improvements to stormwater infrastructure within Innerkip. Alternatives be divided into categories which include: Source Controls;

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Conveyance Controls; End-of-pipe (EOP) Controls; Pollution Prevention; and Operation and Maintenance. The alternatives will be evaluated, and the preferred alternatives will be used to develop the preferred stormwater management strategy and implementation plan to be ultimately documented within the final Stormwater Management Master Plan report.