Committee of the Whole Report

Report Number:	**ENG2024-006**
Meeting Date:	March 5, 2024
Title:	**Drainage Near 149 Fenelon Drive**
Description:	Drainage review
Author and Title:	Juan Rojas, Director of Engineering and Corporate Assets

Recommendation(s):

That Report ENG2024-006, **Drainage Near 149 Fenelon Drive**, be received; and

That this recommendation be brought forward to Council for consideration at the next Regular Council Meeting.

Department Head: _____

Financial/Legal/HR/Other:_____

Chief Administrative Officer:_____

Background:

At the Regular Council meeting on November 21, 2023, Council adopted the following resolution:

> **CR2023-596**
> **Moved By** Councillor Perry
> **Seconded By** Councillor Ashmore
>
> **That** the Memorandum from Councillor Perry, **Regarding Resolution of Culvert onto 149 Fenelon Drive**, received; and
>
> **That** Staff be directed to report back with a solution to the flooding situation in the area by removing, diverting, or burying the culvert by Q1, 2024.
>
> **Carried**

Councillor Perry provided supplementary photos, which can be found in Appendix A.

The lots within the Southview Estates Subdivision were created under Plan 416 and registered on the 8th of November 1962, in the Township of Fenelon, County of Victoria.

A copy of Southview Plan 416 can be found in Appendix B.

Plan 416 has a series of Walkway Blocks (pedestrian passageways) that provide access for the back lots located on Southview Drive, Cameron Drive and Fenelon Drive to the water (i.e. Sturgeon Lake).

The drainage of the subdivision is an approved rural design standard, i.e. drainage ditches and culverts, that captures stormwater from lots on Southview Drive, Cameron Drive and Fenelon Drive and conveys the flows to Sturgeon Lake.

In the area of 149 Fenelon Drive, there is a cross culvert under Cameron Drive that discharges stormwater to the ditch located along the south property line of 149 Fenelon Drive, which then drains to the Fenelon Drive road side ditch, then to a cross culvert near 145 Fenelon Drive which ultimately discharges to Sturgeon Lake.

149 Fenelon Drive is identified as Lot 28 on Plan 416.

The house located on 149 Fenelon Drive was built in 1974 (as per MPAC records), with a building permit for a separate detached garage issued in 2003, file number BPH2003-0242.

The exact construction date of the garage is unknown, however the record aerial photos below from 2004 shows no garage and the 2018 aerial photo shows a constructed garage with a widened driveway.

149 Fenelon Dr. – Aerial 2004

149 Fenelon Dr. – Aerial 2018

Rationale:

Engineering Staff conducted a site visit on February 14, 2024 to review the site conditions, took photographs and a completed a topographical survey of alternative drainage routes.

Pictures taken on Feb 14, 2024 can be found in Appendix C, which contains:

- Pictures of the Swale located on 149 Fenelon Drive
- Picture of cross culvert on Cameron Drive
- Picture of pedestrian walkway from Cameron Drive to Fenelon Drive

The Drainage system is working, as designed, with no staff concerns and no flooding issues. The existing cross culverts are located at the low point of the municipal roads.

It is recommended to continue with the existing drainage pattern as designed and approved.

As per the council resolution CR2023-596, staff looked at two scenarios to divert and re-ditch the flow from the existing cross culvert which outlets to 149 Fenelon Drive.

A layout and map of the scenarios can be found in Appendix D.

Scenario 1 – re-ditching to the south

In order to re-ditch from the outlet of the cross culvert at Cameron Drive and drain to the south to the walkway at an 0.8% grade, a 2.5m cut would be required at the start of the walkway block.

Existing grade at walkway block is 252.337, required grade to provide positive drainage would be 249.868, thus a difference of 2.469m

This is not practical, as it would adversely impact the municipal road right of way, the existing homes along the road section and the pedestrian walkway.

Scenario 2 – re-ditching to the north

In order to re-ditch from the outlet of the cross culvert at Cameron Drive and drain to the north to the intersection of Cameron Drive and Fenelon Drive at an 0.6% grade, a 2.8m cut would be required at the intersection.

Existing grade at southeast corner of intersection is 252.451, required grade to provide positive drainage would be 249.637, thus a difference of 2.814m

This is not practical, as it would adversely impact the municipal road right of way and the existing homes along the road section.

Installation of a storm sewer system, i.e. piping the exiting drainage or piping the re-ditching scenarios.

An underground storm sewer system would only address the minor flows, i.e. the low intensity storm events, and major flows or overland flows would still remain the same.

Also, there would be minimal cover (depth from top of sewer to exiting ground) for a storm sewer system and would be at risk for heaving with costly maintenance and capital costs.

This is not practical and not recommended.

Rip-Rap Cross Culvert at Cameron Road

In late 2023, Public Works department placed Rip-Rap at the inlet (upstream) of the Cross Culvert. Picture of the culvert and rip-rap can be seen in Appendix C, 3rd picture.

It is recommended to also Rip-Rap the outlet of the culvert from end of culvert to property line along the invert of the ditch, within the road right of way. This will help in maximizing the energy displacement during large storm events.

Engineering will coordinate with Public Works to have this implemented in the Spring/Summer of 2024.

Other Alternatives Considered:

N/A

Alignment to Strategic Priorities

This report aligns with the below strategic priorities of the City:

1. Good Government

Financial/Operation Impacts:

N/A

Consultations:

Public Works

Attachments:

Appendix A – Supplementary photos provided by Councillor Perry.

Item 13.6
Supplementary Photos

Appendix B – Southview Plan 416

Southview Plan 416.tif

Appendix C – Photos from February 2024, by City Staff

Photos from Feb 2024.docx

Appendix D – Scenarios for regrading the established drainage pattern (not recommended)

Scenario 1 – re-ditching to the south

Southview Estates - Scenario 1.pdf

Scenario 2 – re-ditching to the north

Southview Estates - Scenario 2.pdf

Department Head email: jrojas@kawarthalakes.ca

Department Head: Juan Rojas, Director of Engineering and Corporate Assets