



OAKVILLE

REPORT

COMMUNITY SERVICES COMMITTEE

MEETING DATE: JUNE 17, 2019

FROM: Roads and Works Operations Department

DATE: May 16, 2019

SUBJECT: Ditch Treatment Options for Drummond Road

LOCATION: 458, 462, 466 Drummond Road

WARD: Ward 3

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RECOMMENDATION:

1. That the staff report, *Ditch Treatment Options for Drummond Road* from the Roads and Works Operations Department, dated May 16, 2019, be received; and
2. That the open drainage ditch across the frontage of 462 Drummond Road be reinstated with pebble or beach stone, similar to the existing upstream treatment.

KEY FACTS:

The following are key points for consideration with respect to this report:

- The Town's municipal storm water drainage network is a combination of underground storm sewers (approx. 1,400kms) and roadside ditches (approx. 200km).
- The Town's storm water network was designed to collect 'storm water runoff' generated from rainfall events.
- Residential sump pumps draw groundwater from around the foundation of a home. This flow is traditionally directly or indirectly connected to the municipal storm water network. Where a home basement penetrates the normal groundwater level of an area, we can have instances of 'highly active' sump pump operations. 'Highly active' sump pumps that direct drainage to a roadside ditch can give rise to nuisance concerns of constantly wet ditch conditions.
- Staff have been dealing with nuisance concerns regarding the roadside ditch on the west side of Drummond Road since 2012.
- The ditch in this location does receive groundwater flows from an upstream residential 'highly active' sump pump, resulting in wet ditch conditions.

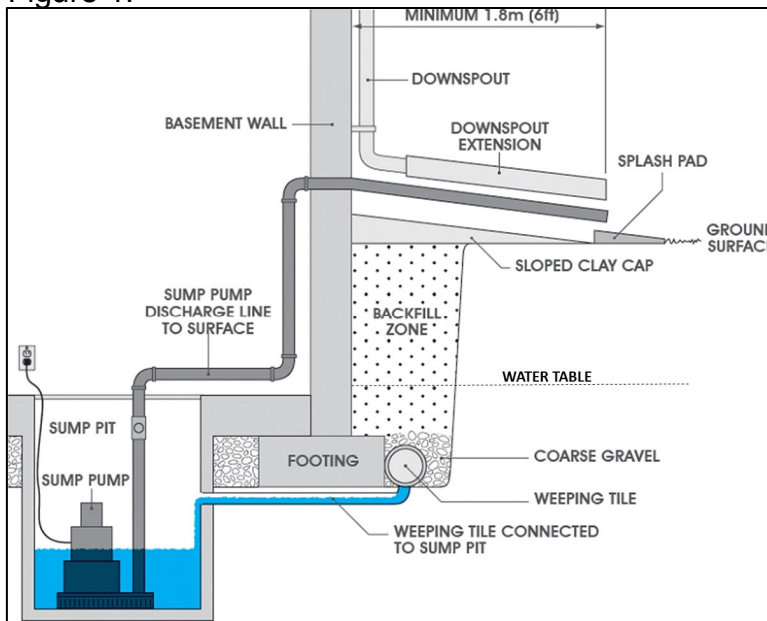
- The subject roadside ditch has been regraded and although positive runoff is achieved, it is slow with water being visibly present within the ditch line.
- In order to mitigate the visible presence of water, staff have proposed the ditch bottom be reinstated with pebble or beach stone.

BACKGROUND:

The Town maintains a storm water drainage network which consist of 1,400 kms underground storm sewer pipes and 200kms of roadside ditches. The storm water drainage network is designed to convey storm water runoff from the roadway as well from the adjacent land surface. Storm water is defined as the runoff (drainage flow) that is the result of a precipitation event (rain/snow melt).

Water flow can however be generated from other sources such groundwater sources. Home construction involving the creation of a basement, typically requires the installation of a perimeter foundation drain to ensure groundwater is effectively removed from the perimeter of the foundation. This is done to minimize the presence of ground water and hydrostatic pressure under the basement floor slab. Figure 1 below sets out the typical arrangement for a sump pump installation.

Figure 1.



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Some of the original homes in our older community areas were built with shallower basements (above the groundwater table) and/or no basement at all, thus negating the need for foundation drains/sump pumps. New home developments however area typically designed with deeper basements that allow for finished basements that then form part of the overall available living space of the home. While it may be an option to build above the water table line, our zoning bylaw restricts the overall height of new home construction in our older areas, thus those that desire 'livable space' within their basement simply 'dig deeper' as opposed to raising the level of their overall building.

In cases where a foundation penetrates the ground water table, we tend to find sump pumps that activate on a frequent/continuous basis. Active sump pump operations tend to be a concern in areas where drainage relief is provided by the roadside ditch system. In these situations, groundwater is directed to the roadside ditch where it can (in instances of a 'highly active' sump pump) create constant/continuous wet ditch conditions.

Roadside ditches, can, over time fill with sediment or erode requiring remedial maintenance and restoration to ensure the ditch provides the necessary conveyance capacity and/or ability to drain efficiently. Ditches by design, drain slowly as their slopes are gentle and their surface, lined with grass. Ditches provide several key functions: treatment (removal of sediment), infiltration, storage and conveyance. As noted within the findings of the 2018 Municipal Natural Asset Initiative, maintaining these key functions of 'natural' drainage network is important.

The town utilizes the following remedial methods for maintaining ditches:

- Regrading to restore or improve drainage
- Restoration of eroded ditch bottom with sod or with an alternative permeable liner such as pebble or beach stone
- In areas of high overland flow, the installation of a sub-drain pipe below the ditch may be utilized subject to an available drainage outlet (for the sub-drain) into an adjacent municipal storm sewer system.

The town has a long standing policy where piping of ditches is not permitted in any residential or commercial area, where drainage is conveyed by an open ditch system. This policy is in keeping with the findings of the Municipal Natural Asset Initiative as enclosing a ditch system effectively removes/reduces its ability to treat, store and allow for infiltration of drainage flows.

At the December 17, 2018 meeting of Town Council, the following direction was provided to staff:

From: Roads and Works Operations Department
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That staff report back to the Community Services Committee by April 2019 on available ditch treatment options to remedy water concerns that have been ongoing since 2012 in the ditches in front of 458, 462 and 466 Drummond Road, including placement of a buried pipe.

The water concerns within the ditch along the front of 458, 462 and 466 Drummond Road are the result of a 'highly active' sump pump and this report has been prepared in response to Council's direction.

COMMENT/OPTIONS:

The current storm sewer system on Drummond Road between Avon Crescent and Ario Road consists of roadside drainage ditches. The drainage ditches are generally finished with sod, with the exception of a short section adjacent to 470 Drummond Road, which is lined with stone pebbles along its bottom.

Roadside open ditches are an effective method to convey storm water runoff from the roadway as well as storm water runoff from adjacent land surfaces. Furthermore, ditches with sod bottoms and sides help to trap sediment and contaminants carried by storm water before discharging into lakes, wetlands, or streams.

In addition to storm water, the roadside ditches upstream of 458, 462, 466 Drummond Road also receive flow from a residential sump pump located at 1288 Avon Crescent (corner of Avon and Drummond), which is 'highly active' providing a frequent and somewhat continuous flow of water to the subject ditch. The home at 1288 Avon Crescent was built according to and in compliance with its approved plans.

Since 2012, residents of 458, 462 and 466 Drummond Road have raised concerns regarding the ongoing flow of water, operation and aesthetics of the ditch in front of their respective properties (see Appendix A for reference map and photos).

The town has regraded and remediated the ditch along these properties as well as the upstream section near Avon Crescent. However, ditch grading and increasing the ditch profile is restricted due to invert elevations of the existing driveway culverts, and although positive runoff is achieved, it is slow with water being visibly present within the ditch line.

One resident, has requested a 'French drain' be installed to mitigate the presence of water within the ditch. A 'French drain' is a trench filled with gravel and/or a perforated pipe, that redirects surface water/groundwater away from an area. Staff have reviewed the area and there is no adjacent outlet for such an underground drain system. Without an outlet, a French drain would surcharge and not drain water, therefore this option is not recommended.

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In order to mitigate the visible presence of water, staff have proposed the ditch bottom be reinstated with pebble or beach stone, similar to the existing up stream treatment. This treatment mitigates the visual presence of the wet ditch bottom while at the same time allowing the ditch to continue to provide the functions of drainage treatment, infiltration, storage and conveyance.

As a result of this and other similar situations emanating from 'highly active' sump pumps resulting from (re)development projects, staff are currently exploring what controls/tools are available to minimize the creation of these situations and/or mitigate the impacts of 'highly active' sump pump operations. Staff will inform Council of our findings and/or recommendations on this matter once we've completed our review.

CONSIDERATIONS:

(A) PUBLIC

Residents at 458, 462 and 466 Drummond Road have been advised of this staff report and the Community Services Committee Meeting of June 17, 2019.

(B) FINANCIAL

There are no financial impacts associated with this report.

(C) IMPACT ON OTHER DEPARTMENTS & USERS

Development Engineering are responsible for storm water management policies and standards; and have been consulted in the preparation of this report. Groundwater treatment systems fall within the purview of the Ontario Building Code and as such, the Building Department has also been involved in the preparation of this report.

(D) CORPORATE AND/OR DEPARTMENT STRATEGIC GOALS

This report addresses the corporate strategic goal to:

- enhance our natural environment
- have environmentally sustainable programs/services

(E) COMMUNITY SUSTAINABILITY

An effective storm water drainage system is vital to the economic, social and environmental sustainability of the community.

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APPENDICES:

A: Drummond Road Reference Plan and Ditch Photos

Prepared by:

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