TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON SEPTEMBER 25, 2018**
FROM:	**KELLY SCHERR, P. Eng., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER**
SUBJECT:	**MOCKINGBIRD CRESCENT LOW IMPACT DEVELOPMENT VOLUNTARY PILOT PROJECT**

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to developing a sump pump discharge to municipal right-of-way management program:

(a) This report **BE RECEIVED** for information; and

(b) that the Civic Administration **BE DIRECTED** to proceed with a voluntary pilot project on Mockingbird Crescent to install low impact development technologies on private property to mitigate sump pump discharge where no storm sewer exists.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

CWC report December 4, 2017: Item 8. Local Improvement Policy Review.

CWC report October 24, 2017: Item 19. Basement Flooding Grant Program By-law Amendment.

2015 – 2019 STRATEGIC PLAN

The following report supports the 2015 – 2019 Strategic Plan through the strategic focus area of Building a Sustainable City including:

- Robust Infrastructure 1B – Manage and improve water, wastewater, and stormwater infrastructure.

BACKGROUND

Purpose

The purpose of this report is to report back on the request made by municipal council at its meeting held on July 24, 2018, (4.6/11.CWC) that the following action be taken with respect to storm sewer connections in residential areas on Mockingbird Crescent:

b) the Civic Administration BE DIRECTED to report back a future meeting of the Civic Works committee with information pertaining to the feasibility of implementing a sump pump discharge mitigation pilot project utilizing low impact development technologies, for properties located on Mockingbird Crescent.

DISCUSSION

Context

A surface flooding issue was brought forward to City staff by residents on Mockingbird Crescent in the spring of 2018. The cause of the issue was determined to be sump

pump discharges to the surface, combined with a high groundwater table throughout the year. The regular sump pump discharge from these homes leads to continually wet conditions during summer months and icing issues on the sidewalk and roadway in the winter months. A portion of Mockingbird Crescent (Appendix 'A': Location Map) was constructed in 1987 and, accordingly, approximately ten homes do not have a fronting storm sewer.

Potential Solutions for Mockingbird Crescent

City staff evaluated three potential options to resolve the surface sump pump discharge issue on Mockingbird Crescent:

1. Use Existing City Grant Programs for Flooding

There are currently two city-funded programs available to eligible individual homeowners who experience basement or surface flooding issues, namely the Basement Flooding Grant Program and the Private Drain Connection Subsidy Program. However, these programs support construction of a connection to the storm sewer as part of the drainage solution. As the impacted homes on Mockingbird Crescent do not have fronting storm sewers, these programs do not apply.

2. Storm Sewer Extension Option

It is possible to undertake a storm sewer extension project through the Local Improvement Act. In accordance with the Act, the cost of the local improvement is shared between the City and the benefitting properties. Municipalities can recover all or part of the cost of the project by imposing local improvement charges on properties that benefit from the work. The cost to each benefitting property owner is typically high due to the significant cost to restore the roadway and curbs.

3. Voluntary Pilot Program – Low Impact Development

As with all engineering disciplines, the management of stormwater is constantly evolving. It was once considered good practice to remove surface runoff as quickly as possible from developed lands and convey it directly to the receiving waters. Now the thought process is changing towards making best possible efforts to retain and infiltrate surface water onsite as much as possible.

Low Impact Development (LID) systems essentially act as sponges on the landscape with layers of porous gravel, sand, or looser soils to promote infiltration. They are designed to soak up rainfall from smaller rain events. In this case, the LID would be designed to accept water from the home's sump pump. This should reduce the frequency and duration that water is ponding on the surface and lessen the amount of water flowing onto the sidewalk or roadway.

City staff could initiate a pilot project in which a consulting engineer would be retained to review and develop appropriate onsite drainage solutions. The onsite solutions may involve LID systems such as soak away pits, infiltration basins, or rain gardens to increase infiltration and reduce surface runoff. Site specific conditions would be assessed as part of this project, including but not limited to grading, groundwater levels, and soil conditions. It is essential that LID features are maintained to ensure that they continue to function and do not become clogged with debris. The long-term maintenance of the LID would be the responsibility of the homeowner.

Cost estimates

A storm sewer extension for Mockingbird Crescent may cost in the order of $350,000 for engineering and construction. This cost would be shared between the ten property owners and the City through a Local Improvement process.

By contrast, the estimated cost for the pilot project to install LID systems for ten properties on Mockingbird Crescent is approximately $5,000 per home and 15% for

engineering. Homeowner participation in this pilot program would be voluntary. The estimated budget for this pilot project would be up to $65,000 subject to 100% participation. There is existing budget for the City to fund this project using funding the Surface Flooding and Erosion Program.

As a result, the voluntary pilot project funded by the City is recommended as a cost effective attempt to improve the surface drainage issues caused by sump pump discharge to surface, with the environmental benefit of promoting infiltration to the native soils. If successful, this pilot project could be extended citywide in areas where there is no fronting storm sewer and included within the City's design standards. If problems persist after the pilot, the Local Improvement process remains available to extend the storm sewer and connect the individual properties.

CONCLUSIONS

A City funded voluntary pilot project is recommended to develop an engineered solution to manage sump pump discharge water onsite through the implementation of LIDs. The section of Mockingbird Crescent without a fronting storm sewer would make a good candidate for such a pilot project, based on the significant volume of sump pump discharge experienced throughout the year and the number of complaints received by the City.

Further, Civic Administration can evaluate a capital budget business case for a solution to manage sump pump discharge citywide, where a suitable municipal storm outlet is not available, as part of the multi-year budget process.

Acknowledgements:

Marcy McKillop, P.Eng. of Wastewater and Drainage Engineering

SUBMITTED BY:	**SUBMITTED BY:**
TOM COPELAND, P. ENG. **DIVISION MANAGER** **WASTEWATER AND DRAINAGE ENGINEERING**	**SHAWNA CHAMBERS, P.ENG.** **DIVISION MANAGER** **STORMWATER ENGINEERING**
REVIEWED AND CONCURRED BY:	**RECOMMENDED BY:**
SCOTT MATHERS, MPA, P.ENG. **DIRECTOR, WATER AND WASTEWATER ENGINEERING**	**KELLY SCHERR, P.ENG., MBA, FEC** **MANAGING DIRECTOR** **ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER**

August 31, 2018

Appendix A – Location Map