COMMITTEE OF THE WHOLE – FEBRUARY 7, 2012

DRAINAGE ISSUES ON ANTHONY LANE
WARD 5

Recommendation

The Commissioner of Engineering and Public Works recommends:

1. That the City maintain the current position with respect to responsibilities for addressing drainage issues on private property resting with the owners of said properties; and

2. That City staff be directed to address the surface water condition now existing in the municipal right-of-way at the frontage of 110 Anthony Lane (Option 2, as identified within this report).

Contribution to Sustainability

Not Applicable.

Economic Impact

The costs associated with the implementation of a connection into the Foundation Drain Collector (FDC) sewer at 110 Anthony Lane will amount to approximately $10,000. Sufficient funding is available within the draft 2012 Operating Budget.

Communications Plan

Engineering Services staff will advise affected area residents through an additional public information meeting of Council's decision on this matter.

Purpose

To explore potential drainage solutions to the affected residents on Anthony Lane.

Background - Analysis and Options

At its meeting on November 8, 2011, Council approved:

> **"That staff be directed to explore potential drainage solutions to this situation with the residents and that the results of staff's efforts be presented to Committee of the Whole no later than January 31, 2012."**

In 2007, staff responded to concerns from residents regarding ponding water in the rear of homes 104 to 110 Anthony Lane (see Attachment No. 1 – Location Map). At that time, it was observed that drainage swales located behind the homes on Anthony Lane experienced large areas of water ponding. This land is owned by the Province and managed by the Ontario Reality Corporation (ORC) and Hydro One. The ORC has since merged with Infrastructure Ontario to become a new Government Agency called the Ontario Infrastructure and Lands Corporation. For the purpose of this report these lands adjacent to Anthony Lane will be referred to as ORC lands.

A site review performed by staff on April 15, 2008 verified that water was pooling in the backyards of these four properties. It appeared that there was a constant source of water entering the properties, however, there were no visible signs that water was being conveyed via the ORC lands. It was further observed that water was seeping upward, from below the ground surface, into the backyards.

Following this site review, staff corresponded with the ORC to request that they carry out drainage improvements on their property in order to potentially help alleviate the issues identified at the properties on Anthony Lane. In September 2010, ORC engaged an engineering consultant to develop a solution(s) in order to ensure proper drainage of surface water for their property. After undertaking a topographic survey of the provincially-owned property, the engineering consultant, GENIVAR, concluded that *"run-off from the provincial property is not physically able to drain surface water directly onto the adjacent residential properties on Anthony Lane".*

In its report, the consultant recommended undertaking work to improve the drainage on the provincially-owned property by extending the length, improving the grade and widening of the existing drainage swale behind the affected properties on Anthony Lane to limit the ponding on the provincial property. As a result, the improvements have been completed to the swale as per the design developed in the ORC report. This work was completed by the ORC on December 21, 2010.

A supplementary review of this matter and site investigation was conducted on March 28, 2011 by GENIVAR, as flooding of the property located at 110 Anthony Lane had continued. The GENIVAR report concluded that there are no signs of surface water migration onto the rear yard of 110 Anthony Lane that originated from the ORC property. GENIVAR also recommended that the owners of the properties on Anthony Lane experiencing flooding have independent inspections carried out to determine the origin and source of the flooding. GENIVAR concluded that:

> *"it is possible, that shallow groundwater is seeping up into these properties. The observation was that the area of the ponding may be a localized low point in the rear yards and the presence of the wetland immediately west of this area indicates that water has a tendency to be retained on site. The top strata of soil can become saturated, particularly in the spring when the ground below is frozen. The backyards of these properties are located slightly hydraulically down gradient of the subject property which may provide an outlet for shallow groundwater perched on a confining layer below - essentially a spring... This would need to be confirmed through a hydrogeological assessment which was beyond the scope of this investigation"*

A meeting with staff and the affected residents took place at the Dufferin Clark Community Centre on December 1, 2011. The residents identified the following issues:

- The flooding issues started within the last 6-8 years.
- Some residents are experiencing water entering their basements, permeating through the concrete basement floor.
- The issue seems to have worsened since the ORC completed their ditching work in December 2010.
- The only time of the year that water does not pond in the rear yards are during periods of low precipitation (usually over the summer months).
- Some owners have their downspouts directly connected to the underground subdrain of their home.

<u>Review of City Infrastructure</u>

Staff have reviewed all municipal infrastructure within the vicinity of Anthony Lane consisting of:

- 150mm diameter PVC water main pipe
- 200mm diameter PVC sanitary sewer pipe
- 200mm diameter PVC foundation drain collector sewer pipe

and have determined that this infrastructure is operating within defined parameters. There is no storm sewer within the frontage of house nos. 60 to 124 Anthony Lane. The following assessments were completed:

- The area watermains were tested for leakage
- The ground water that currently discharges from 110 Anthony Lane via subdrain/weeping tile from the rear of the property to the front at the City curb was also tested to determine that the source does not originate from a City owned watermain
- The FDC sewers were inspected with closed caption television (CCTV) equipment to identify that the drains are functional.

As a result of these investigations, staff has determined that the City's infrastructure is not causing the ponding issues experienced at the properties on Anthony Lane.

During the investigations it was identified that, in an effort to mitigate the rear yard flooding, the owner(s) of 110 Anthony Lane installed a weeping tile pipe from the rear to the front of their property, and extended the pipe onto the municipal right-of-way by cutting through the City sidewalk and curb. The pipe discharges water causing maintenance issues on a regular basis. As a result, the discharged water freezes during sub-zero temperatures. Staff have been advised by the owner(s) of 110 Anthony Lane that this measure has not alleviated the drainage issues in their backyard. At the December 1, 2011 meeting, the residents alleged that there are also drainage issues at the properties east of 110 Anthony Lane.

As a result of the investigations carried out to date, staff have explored a number of options. The following section provides a summary of the alternatives to be considered.

Review of Alternatives

Staff have developed a short list of alternatives, evaluated them against a common set of criterion and determined a preferred alternative. The alternatives were developed and assessed on the following considerations:

1. Requirement of the Anthony Lane property owners
2. Overall impacts as a result of implementing the alternative
3. Cost to the City

The following three alternatives were developed (Refer to **Table 1** for evaluation of alternatives):

1. Maintain the existing condition.

2. Address the surface water in the municipal right-of-way fronting 110 Anthony Lane.

3. Investigate the private portion of the sewer connection along with the weeping tile system for the affected property owners.

4. A) The City undertake a full hydrogeological study of the drainage conditions in the vicinity of 102 – 110 Anthony Lane.

   B) The City undertake all studies and repairs.

TABLE 1: EVALUATION OF ALTERNATIVES

	Alternative Description	Impacts	Cost to the City
1	**Maintain the existing condition.** As this matter is on private property, it is the responsibility of homeowners to resolve.	1. City has no jurisdiction on private property. 2. Continued flooding on private property and discharge of water onto City sidewalks and roadway causing operational challenges. 3. Residents would be required to engage their own consultant to investigate and carry out any necessary repairs.	Ongoing (Operational costs associated with maintaining area impacted by water discharge)
2	**Address the surface water in the municipal right-of-way fronting 110 Anthony Lane.** Provide a connection to drain the excess water into the FDC sewer.	1. Does not address the flooding issue in the rear yards. 2. Addresses the operational and maintenance concerns regarding the potential for water freezing on municipal right-of-way.	$10k (tax levy funding)
3	**Investigate the private portion of the sewer connection along with the weeping tile system for the affected property owners utilizing CCTV.** Investigation requires the excavation of the existing weeping tile system at various locations along the perimeter of the affected homes to accommodate the CCTV review. This will determine the effectiveness of water conveyance around the house foundation.	1. Does not immediately address the flooding issue in the rear yards. 2. City would absorb cost for drainage issue investigation on private properties, a new position for the City. Could set a significant precedent 3. Requires the need to mobilize heavy vehicles onto private property as well as excavation around the perimeter of the homes is. This would increase the risk for damage to private property and may result in future claims for property damage as a result of the work. 4. May not be successful in determining the condition. Access will be very difficult since weeping tile foundation drain systems are not designed for inspection by camera. Additional excavation around the homes may be required to facilitate the CCTV inspection. It is not ideal to inspect a weeping tile system via CCTV due to the corrugated structure. 5. Significant impact to affected residents and cost to City without performing any remedial work. Any identification to replace weeping tile would require significant further excavation along the entire perimeter of the dwelling. 6. Requires negotiation of individual agreements for carrying out work on private property. .	$75k (tax levy funding)

TABLE 1: EVALUATION OF ALTERNATIVES (cont'd)

	Alternative Description	Impacts	Cost to the City
4A	**The City undertake a full hydrogeological study of the drainage conditions in the vicinity of 102 – 110 Anthony Lane.** Carry out the appropriate hydrogeological studies to determine the cause of the flooding and provide the results to the affected property owners for remedial action	1. Does not address the operational and maintenance concerns regarding the potential for water freezing on municipal right-of-way until the recommendation(s) of the study are implemented. 2. The City will be required to retain a hydrogeologist to determine the source of groundwater on private properties, including but not limited to ORC managed land, Hydro One managed land, and Anthony Lane properties. 3. City would assume the cost responsibilities for private drainage issue investigation on private properties, a new position for the City. Could set a significant precedent. 4. Requires negotiation of individual agreements for carrying out work on private property.	$125k (tax levy funding) *(Costs dependent on extent of studies required)*
4B	**The City undertake all studies and repairs.** The City will carry out the appropriate studies to determine the cause of the flooding and implement all the recommended solutions	1. The same as the impacts identified in alternative 4A.	exceed $150k (tax levy funding) *(Costs dependent on extent of studies and repairs required)*

Based on the evaluation, the preferred alternative is Option 2 - to address the surface water in the municipal right-of-way fronting 110 Anthony Lane. Based on the review of the CCTV, there is capacity to accommodate some additional flow within the existing FDC sewer. Providing a connection to convey the excess water is not a standard City practice, however, this solution will aid in addressing what is now a municipal liability in the municipal right-of-way while maintaining the private homeowner's responsibilities to investigate/address the drainage issues on private property.

Relationship to Vaughan Vision 2020/Strategic Plan

In consideration of the strategic priorities related to Vaughan Vision 2020, the recommendations of this report will assist in enhancing and ensuring community safety, health and wellness; priorities previously set by council. The proposed installation of a collection pipe to collect the ground water will ensure that an appropriate level of service is maintained for residents and pedestrian in the vicinity of 104 – 110 Anthony Lane.

Regional Implications

Not Applicable.

Conclusion

The recommendations resulting from the investigation of flooding of residential homes on Anthony Lane are:

1. That the City maintain the current position with respect to responsibilities for addressing drainage issues on private property resting with the owners of said properties; and

2. That City staff be directed to address the surface water condition now existing in the municipal right-of-way at the frontage of 110 Anthony Lane at an estimated cost of $10,000.00.

Attachments

1. Location Map.

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Respectfully submitted,

Paul Jankowski, P. Eng.
Commissioner of Engineering and Public Works

Jack Graziosi, P. Eng.
Director of Engineering Services

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LOCATION MAP

ANTHONY LANE

LOCATION : Part of Lot 5, Concession 3

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NOT TO SCALE

Drawing name: O:\Engineering Services\Design Services\Design Drafting\$ENGSERV\PAOLO MASARO\$Anthony Lane Attachment.dwg

CITY OF VAUGHAN - ENGINEERING SERVICES DEPARTMENT

DRAFTSPERSON: B.R.