

## Staff Report

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<b>Report To:</b>	<b>Planning and Development Committee</b>		
<b>Date of Meeting:</b>	April 6, 2021	<b>Report Number:</b>	PDS-022-21
<b>Submitted By:</b>	Ryan Windle, Director of Planning and Development Services		
<b>Reviewed By:</b>	Andrew C. Allison, CAO	<b>By-law Number:</b>	
<b>File Number:</b>	PLN17.3	<b>Resolution#:</b>	
<b>Report Subject:</b>	Graham and Wilmot Creek Flood Plain Mapping Update Study		

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### Recommendations:

1. That Report PDS-022-21 be received;
2. That Council approve the Municipal contribution of \$30,000 from the Tax Rate Stabilization Reserve Fund to undertake the Graham and Wilmot Creek Flood Plain Mapping Update Study, in partnership with the Ganaraska Region Conservation Authority, the Region of Durham, and the National Disaster Mitigation Program;
3. That the Mayor and Clerk be authorized to execute the necessary agreements; and
4. That all interested parties listed in Report PDS-022-21 and any delegations be advised of Council's decision.

## **Report Overview**

Flood plain mapping helps to identify areas that may be at risk of flooding during severe storms and is an important tool for land use planning and emergency preparedness. Ganaraska Region Conservation Authority's flood plain mapping for the Graham and Wilmot Creek watersheds is nearly 45 years old and is the oldest of the flood plain data sets used for Clarington.

The National Disaster Mitigation Program provides funding support for flood mitigation projects, with focus on those that inform future mitigation investments. In late 2020, Planning and Development Services, in partnership with Ganaraska Region Conservation Authority and the Region of Durham, applied to the National Disaster Mitigation Program for grant support for the Graham and Wilmot Creek Flood Plain Update Study. Approval of the Municipality's portion of the project costs is being recommended.

## **1. Background**

- 1.1 On November 10, 2020, the Federal Government announced a new intake (intake 6) of the National Disaster Mitigation Program (NDMP). This intake invited eligible organizations to submit proposals for funding support of up to 50% to a maximum of \$1.5 million per eligible project.
- 1.2 The Ganaraska Region Conservation Authority (GRCA) approached the Municipality and the Region of Durham to collaborate on a funding application to update the flood plain mapping for the Graham and Wilmot Creek watersheds. GRCA's existing flood plain mapping for these two watersheds dates back to 1977.
- 1.3 On November 30, 2020, Planning and Development Services submitted a proposal to the NDMP for the Graham and Wilmot Creek Flood Plain Mapping Update Study (Study). Notice of provincial support of the application was received on February 1, 2021. An update was received on March 23, 2021, indicating a delay in Federal decision making. However, projects that may be compromised by a delayed start date were authorized to proceed as of April 1, and project costs incurred from this date would be recognized if federal approval is granted.
- 1.4 The purpose of this report is to seek approval of the Municipal funding contribution for the Study in advance of the Federal decision. These funds will allow for the field / survey work to proceed this spring, which is necessary for the project to be completed within the prescribed NDMP project completion timeframe.

## **2. Overview**

### **Study Area**

- 2.1 The Graham and Wilmot Creek watersheds are shown in Attachment 1. The Graham Creek watershed drains an area of 78 square kilometers. Mulligan Creek is the largest tributary of Graham Creek; however, other tributaries such as Crooked Creek and Lytle Creek are also part of the watershed. The Wilmot Creek watershed drains an area of 98 square kilometers. The main branch of Wilmot Creek is joined by four other tributaries - Orono Creek, Hunter Creek, Stalker Creek and Foster Creek.
- 2.2 The urban areas of Newcastle Village and Orono, along with the hamlets of Brownsville, Leskard and Newtonville fall within these watersheds. The total population of these watersheds is approximately 13,400 people, with 73% in the urban areas, 3% in the hamlets and 24% in the rural areas.
- 2.3 Of the approximately 13,400 people living in the watersheds, 11% live within the existing mapped flood plain. There are three senior (assisted living) residences, three childcare facilities and six schools within 100 m to 500 m of the existing mapped flood plain area. In addition, 25 commercial and industrial businesses and 531 municipal infrastructure assets are located in the existing mapped flood plain.

### **Study Purpose**

- 2.4 The original flood hazard mapping for Graham and Wilmot Creeks was completed by Dillion Consulting for the GRCA in 1977. The Study will update flood plain mapping for the Graham and Wilmot Creek watershed areas to accurately identify the areas currently subject to flooding, factoring in changes that have occurred over time that can affect the size and location of the flood plain area. These include updated topographical information, improved modelling techniques and software, and new development and infrastructure construction. The scope will exclude Foster Creek, which was recently updated as part of new development in the area.
- 2.5 Knowing the extent of a flood plain is an important tool for land use planning and emergency management. It informs the Official Plan, zoning by-law and the review of development applications, helping to direct future development outside of flood-prone areas, to avoid injury, loss of life and property damage. It is also used to identify where flooding may impact access to roads, and emergency routes, and can help property owners to understand their potential risk of and to prepare for a flooding event. In addition, flood plain mapping can be used to support assessments of the vulnerability of roads and culverts to riverine flooding across Clarington.

- 2.6 The Study will use the 2016 provincial LiDAR data and additional structure survey information to update the hydrologic and hydraulic models for Graham and Wilmot Creeks to modernize the flood mapping for the vulnerable areas of Newcastle and Orono.

### Funding

- 2.7 The NDMP is administered by Public Safety Canada. The program invests in projects that support building a body of knowledge on flood risks and foundational flood mitigation programs. The original program period from 2015 to 2020 was renewed to provide two additional years.
- 2.8 Intake 6 of the NDMP Program was opened for project proposals which included flood risk assessments, flood mapping, flood mitigation plans and non-structural flood mitigation projects, to be undertaken between April 1, 2021 and March 31, 2022.
- 2.9 The Study was submitted as a Stream 2: Flood Mapping proposal. It is estimated that the full 12-month project period will be required to complete the Study and grant reporting requirements and involves both field work and computer modelling. The work would be carried out by the GRCA as they have LiDAR expertise.
- 2.10 The total budgeted cost to undertake the Study was \$141,000. The breakdown of cost contribution to the project, as proposed, is outlined in Table 1.

**Table 1: NDMP Project Proposal Cost Contribution Breakdown**

Contributor	Type	Contribution Amount
National Disaster Mitigation Program	Grant	\$70,500
Region of Durham	Funding	\$30,000
Ganaraska Region Conservation Authority	In Kind	\$10,500
Municipality of Clarington	Funding	\$30,000
		<b>\$141,000</b>

### Linkages to Other Projects

- 2.11 The Study builds on previous work done within the Municipality that was supported by the NDMP, such as the *Emergency Flood Access Risk Assessment and Mitigation Study* (Aquafor Beech Limited, March 31, 2020), which indicated the following:

Models for Wilmot and Graham Creeks are not georeferenced (crossings could not be located within the watersheds based on their IDs) and were flagged by the study team as potentially not being accurate from a vertical datum and results perspective. Therefore, the results from the existing HEC-RAS models for Wilmot and Graham Creeks were not used in the analysis in this study (except for one crossing which could be located in Wilmot Creek).

By producing updated models and mapping for Graham and Wilmot Creeks, elements of the previous *Emergency Flood Access Risk Assessment and Mitigation Study* (Aquafor Beech Limited, March 31, 2020) and other Flood Risk Assessment work undertaken by GRCA for Clarington can be updated to provide better quality information for emergency planning and flood mitigation purposes.

2.12 The Study aligns with Action 3.3 of the Clarington Corporate Climate Action Plan - work with the Conservation Authorities to update flood mapping based on the most up-to-date climate projections. It also supports implementation of several other CCCAP actions, including:

- Action 2.21 - Identify roadways that are the least likely to be impacted by flooding and incorporate them into community emergency evacuation plans.
- Action 3.6 - Assess the municipal trail system to determine areas that are most vulnerable to flooding based on climate projections.
- Action 3.8 - Utilize climate projections to identify areas of roads that are vulnerable to flooding. Create a plan to upgrade road areas that are at high risk.
- Action 4.17 - Assess bridges and embankments to determine areas that are most vulnerable to flooding based on climate projections.

2.13 The Study is also linked to an NDMP (Intake 6) application that was submitted by the Region of Durham to assess vulnerable roads and culverts to riverine flooding across Durham Region and confirm their ability to meet intended design standards under current and future climate change scenarios. The updated models and mapping produced through the Study would be used to inform the Region of Durham's risk assessment work.

### **3. Concurrence**

3.1 This report has been reviewed by the Director of Financial Services/Treasurer who concurs with the recommendation.

## 4. Conclusion

- 4.1 Flood plain mapping is an important tool for land use planning and emergency management. GRCA's flood plain mapping for the Graham and Wilmot Creek watersheds is nearly 45 years old. The information updated through this study will be used to update the flood hazard mapping for Graham and Wilmot Creeks as administered by the GRCA, will inform the updated Municipality of Clarington Official Plan and zoning mapping, will support the creation of future inundation mapping, and will be used in future risk analyses by the Region of Durham and others.
- 4.2 The NDMP provides an opportunity to offset 50% of the \$141,000 required to update the flood plain mapping with the majority of the remaining funds offset by partner contributions from GRCA and the Region. It is respectfully recommended that the Municipality's financial contribution of \$30,000 (21% of project costs) be approved in order to proceed with the necessary field / survey work this spring to avoid negatively impacting the project schedule. Should NDMP funding be denied, other funding opportunities will be pursued, and the updated field / survey data will be needed for future use.

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Staff Contact: Amy Burke, Senior Planner, 905-623-3379 ext. 2423 or [aburke@clarington.net](mailto:aburke@clarington.net) and Faye Langmaid, Manager of Special Projects, 905-623-3379 ext. 2407 or [flangmaid@clarington.net](mailto:flangmaid@clarington.net)

### Attachments:

Attachment 1 – Graham and Wilmot Creek Watersheds Map

### Interested Parties:

The following interested parties will be notified of Council's decision:

Linda J. Laliberte, CAO, Ganaraska Region Conservation Authority  
Elaine Baxter-Trahair, CAO, Regional Municipality of Durham