



GEORGINA

Subject: **Pefferlaw Dam Investigations and Capital Works Update**

To: Mayor and Council

From: Operations and Infrastructure Department
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Date: May 3, 2023

Briefing:

The following provides an update on work that has been completed and next steps planned for capital work at the Pefferlaw Dam.

Background

Ownership of the Pefferlaw Dam and the surrounding Pefferlaw Dam Conservation Area was transferred from the Lake Simcoe Regional Conservation Authority to the Town of Georgina on June 30, 2022. As part of this transfer it was agreed that the Town of Georgina would assume responsibilities for repairs, maintenance and operation of the dam and its surrounding property. For reference, detailed background information related to the history and transfer of ownership of the Pefferlaw Dam and surrounding lands are described in:

- Briefing note to the Mayor and Council titled, "[Pefferlaw Dam – Lake Simcoe Region Conservation Authority – Funding Support](#)" dated May 27, 2020;
- Briefing note to the Mayor and Council titled, "[Town Solicitor's Legal considerations – Pefferlaw Dam](#)" dated March 31, 2021;
- Briefing note to the Mayor and Council titled, "[Pefferlaw Dam Update](#)" dated July 14, 2021; and,
- Briefing note to the Mayor and Council titled, "[Pefferlaw Dam Update](#)" dated April 27, 2022.

Related to the transfer of ownership of the Pefferlaw Dam, studies were completed that identified the following recommended actions:

- Implementation of various public safety measures including signage and floating hazard warning markers upstream of the dam, operational control procedures, public safety education and planning;
- Various structural concrete repairs, pedestrian bridge repair, erosion and earthworks/soil stability improvements, localized tree removals, and fencing; and,
- Investigations, and if warranted, remediation of historical environmental contaminants that were thought to be present on the property.

The following studies have been completed pertaining to the Pefferlaw Dam:

- Dam Inspection Report, Pefferlaw Dam, D.M. Wills Associates Limited, July 2020;
- Structural Design Memorandum, Pefferlaw Dam, D.M. Wills Associates Limited, July 2020;
- Spring Dam Inspection Report, D.M. Wills Associates Limited, April 4, 2022;
- Phase 1 Environmental Site Assessment, 219 Pefferlaw Road, Cambium Inc., April 7, 2022;
- Phase 2 Environmental Site Assessment, 219 Pefferlaw Road, Cambium Inc., April 7, 2022;
- Public Safety Risk Assessment, Pefferlaw Dam, D.M. Wills Associates Limited, September 2022;
- Dam Safety Assessment, Pefferlaw Dam, D.M. Wills Associates Limited, September 2022;
- Supplemental Phase 2 Environmental Site Assessment, 219 Pefferlaw Road, Cambium Inc., December 8, 2022;
- DRAFT Due Diligence Risk Assessment - 219 Pefferlaw Road, Cambium Inc., December 16, 2022; and,
- Supplemental testing (zone narrowing) - Phase 2 Environmental Site Assessment, 219 Pefferlaw Road, Cambium Inc., April, 2023

Figure 1 shows the dam, the adjacent property and the approximate locations of the recommended capital works activities that are being undertaken.



Figure 1 – Pefferlaw Dam Capital Works

Public Safety Measures

The public safety risk assessment report prepared by D.M. Wills Associates Limited in September 2022 recommended the following capital improvements be undertaken:

- Install public safety signs upstream of the dam, downstream of the dam and at the pedestrian bridge; and
- Install floating hazard marker buoys at the head pond area.

The Town's Operations and Infrastructure Department and Parks Development and Operations Division are currently collaborating to procure and install the above recommended public safety measures. It is anticipated that these tasks will be completed in June/July 2023.

Structural and Earthworks Repairs

The dam safety assessment prepared by D.M. Wills Associates Limited in September 2022 recommended the following capital improvements be undertaken to address defects in the condition of the dam:

- Rehabilitate various deteriorated concrete components of the dam;
- Implement measures to stop seepage along the weirs on both sides of the spillway;
- Install anchors in the weir structures;
- Adjust embankment slopes and provide erosion protection;
- Remove trees from embankments adjacent to dam concrete structures and harden earth embankment slopes;
- Repair erosion observed at the existing earthen embankments and the armour stone retaining walls;
- Replace the steel bridge and operating deck, incorporating fall arrest features and safety railings; and,
- Repair portions of chain link fence.

The Operations and Infrastructure Department is preparing a Request for Proposals to procure engineering design and construction support services for the above tasks. It is anticipated that the engineering design services will be completed in 2023 with construction planned for 2024.

Environmental Remediation

Environmental site assessment and risk assessment reports prepared by Cambium Inc. in April 2022, December 2022 and finalized in April 2023 presented the following key conclusions and recommendations:

- Groundwater
 - On-site groundwater contamination is not a risk for site visitors, off-site residents including neighbouring well users, or ecological receptors (i.e., vegetation, birds, mammals, etc.).
- Soil
 - West side of river - one area of antimony contamination present, however, at no risk to human health or ecological receptors. Therefore no risk management measures recommended.
 - East side of river - select minor parameter exceedances related to historical industrial property use and fires at depth (0.15m – 3.0m). Presence of these contaminants poses a limited risk when modelled on long-term, frequent exposure. Soil remediation actions are proposed to mitigate this risk.

- Recommendations:
 - The recommended remedial actions were developed in general accordance with O Reg. 153/04 to mitigate risk of exposure to soil contaminants. In the east portion of the property, the recommended remedial action is to place additional clean soil or hard cap material in the area where contaminants are known to be present. The objective is to establish a consistent minimum separation layer of 0.5 m thickness over the contaminated area.
 - Further soil sampling and testing to more precisely delineate the zones in the east portion of the property which require capping prior to construction.

Council approved an initial budget of \$1.0M for works associated with the Pefferlaw Dam and adjacent properties in 2022 through a reallocation of reserve funds. Any additional budget needs required to complete the public safety measures, structural and earthworks repairs, and environmental remediation will be included as a 2024 budget request. There is sufficient budget to complete the engineering design in 2023.

The engineering design services for soil remediation are included in the Request for Proposals for the dam structural and earthworks repairs described above, to be released in early May, 2023. The engineering design for all works is to be completed in 2023 and construction planned for 2024. Further information about the project can be found at the Town's webpage at georgina.ca/PefferlawDam