

REPORT

Engineering Services

To: Mayor Cote and Members of Council **Date:** December 13, 2021

From: Lisa Leblanc **File:** 09.1750.55
Director of Engineering Services (Doc# 1960293v4)

Item #: 2021-615

Subject: Queensborough Historic Area Drainage Update

RECOMMENDATION

THAT Council receive this report for information.

PURPOSE

This is an information report on the completed drainage improvement works in the historic area of Queensborough, the continuing work to remove localized drainage barriers and a planned follow-up meeting with local residents.

SUMMARY

In response to the chronic flooding in the low-lying historic area of Queensborough, which is bounded by Ewen Avenue, Boyd Street, Wood Street and Johnston Street, the City has been undertaking drainage capital works in recent years. The work program was prioritized in phases: 1) upgrades to the major collector drainage system; and 2) removal of local drainage barriers. Phase 1 is now largely completed and has resulted in significant reduction in flooding in the area. Phase 2 is currently in progress and a number of local drainage barriers (unauthorized culvert extensions and retaining walls) on Fenton Street and Boyd Street have been identified for removal in 2021/2022. City staff is informing the affected property owners that they are required to remove these unauthorized barriers.

BACKGROUND

Queensborough (QB) is located in the low-lying Lulu Island area within the Fraser River Floodplain and is historically prone to seasonal flooding. The land is protected from Fraser River flooding by a perimeter diking system that was constructed over the last century. A

number of drainage pump stations were installed to convey the inland ditch drainage through the perimeter dike into the Fraser River. Concurrent with historical development of the area, a network of open ditches was built to address inland drainage. The roadside drainage ditches are maintained by City Engineering Operations staff. At driveway crossings, a standard 6 m wide culvert is typically installed to maintain drainage flow, usually at the time of building permit issuance.

Over the years, some residents have independently filled in the roadside ditches to widen their driveways and to increase parking space. Some property owners also built retaining walls within the road right-of-way within drainage ditches, presumably to improve their front yard area. The resulting patchwork of unauthorized driveway extensions with sub-standard and deteriorating culverts and retaining walls impedes proper drainage and hampers Engineering Operations crews’ ability to clean and maintain the ditches. Some residents have also expressed that the resultant streetscape is visually unappealing.

Over the years, the older areas in QB have experienced more localized flooding due to their low elevations, flat topography and higher runoff from increased impervious area. The historic area (see Figure 1), which is bounded by Ewen Avenue, Boyd Street, Wood Street and Johnston Street experiences the most chronic flooding.

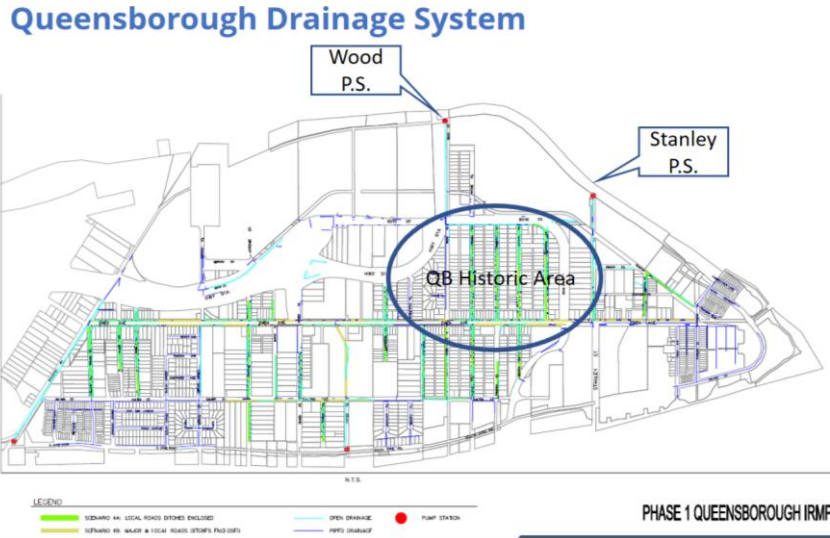


Figure 1 Queensborough Historic Area

In response to the flooding concerns and the need to replace aging infrastructure, the City conducted a detailed analysis of the historic area drainage and developed a phased improvement program. Phase 1 is to address capacity constraints and flow barriers within the main collector drainage system. Phase 1 works commenced in 2018 and were largely completed by late 2019. They included:

- Wood Street Drainage Pump Station Replacement;
- Wood Street Canal dredging and widening;

- Boyd Street storm sewer and road culvert crossing improvements;
- Two major culvert crossing replacements at Boyd/Duncan Street and at Boyd/Johnston Street;
- General ditch maintenance in specific areas.

Phase 1 improvements have drastically improved the drainage in the historic area as discussed in the Analysis section below.

Phase 2 of the drainage improvement program is aimed at addressing the localized flooding by removing drainage barriers within the ditches, including unauthorized extended driveway crossings, retaining walls and other structures.

EXISTING POLICY AND PRACTICE

Previously, the Zoning Bylaw allowed each property a driveway no wider than 6 meters. Each driveway crossing required a culvert underneath it, in order to keep the ditch drainage integrity. This provision is not included in the current amended Zoning Bylaw. The culvert crossing design is now regulated under the Subdivision and Development Control Bylaw No. 7142 and is to be installed by the Engineering Department at the property owner's cost during building permit stage.

Sewerage and Drainage Regulation Bylaw No. 7746, 2015

This bylaw gives the City authority to regulate, prohibit and impose requirements in relation to municipal services of disposal of Sewerage and Drainage.

Part 6 Section 44 of the bylaw prohibits construction of a *Watercourse* crossing except as permitted under Section 45 by the Director of Engineering.

Part 6 Section 45 states "An owner may construct or permit the continued existence of a crossing over any part of a *Watercourse* abutting his or her property, if the crossing complies with the standard width requirement for allowable access and does not obstruct the flow of water in the watercourse."

Part 6 Section 46 states "Where a person contravenes Section 45 of this Bylaw, the City may remove the *Watercourse* crossing or the obstruction at the cost of that person."

Ditch Infill Policy in Queensborough

Residents and builders in the historic QB neighbourhoods have expressed an interest in transforming their rural streetscape into a more uniform, urban environment. A report to Council dated September 14, 2015 (Attachment 1) outlined a strategy to enclose ditches on selected streets in Queensborough that are planned for infill development. Four implementation scenarios are included: 1) Local Area Service Program (LASP); 2) Subdivision Development; 3) Building Permit; and 4) Request by individual property owners where there is no subdivision, building permit, or LASP initiative. Development

applications, including building permits, would require applicants to enclose the frontage ditches with an engineered storm system approved by the Engineering Department (unless the ditch is designated to remain as an open channel for flood management and/or environmental functions).

Council endorsed the strategy and directed staff to consult with the Queensborough community and report back on community feedback with recommendations. A subsequent report was presented to Council on March 7, 2016 (Attachment 2) and advised that the community provided positive feedback on the strategy. All new developments are now required to build enclosed drainage systems along their lot frontages, in areas where the topography allows this.

Engineering Services has since developed a policy, procedure and requirements for residents who wish to have their frontage ditch enclosed or are required to do so under a Building Permit. This policy establishes the process of design and minimum standards in order to infill a frontage ditch with a proper engineered storm system (Attachment 3).

ANALYSIS

As a result of chronic winter flooding in the historic area of Queensborough and complaints received from residents, staff have inspected the area, met with the concerned parties and communicated our multi-phased program to improve drainage in the area. The area residents agreed with the phased approach and were given progress updates.

Phase 1: Collector Drainage System Improvement Results

The Phase 1 works as discussed in the preceding section were largely completed in late 2019, and will ultimately cost the City approximately \$8 million. Following the completion of the extensive works, staff noticed a marked improvement in the chronic flooding issue. For example, during the record rainfall events of December 2019 and January of 2020 staff noticed less flooding at 331 Fenton Street (lowest point in the area), with a rapid return to normal condition following the cessation of the storm (within 1-2 hours). Prior to the drainage improvements, the flooding would persist for 10 to 24 hours following the cessation of rainfall. Some outstanding channel works north of Boyd Street and west of Wood Street have recently received the necessary environmental permits. Staff are pursuing this work now, and anticipate completion in 2022.

Phase 2: Removal of Localized Drainage Barriers (unauthorized culvert extensions and retaining walls in ditches)

Inspection of the historic area also identified a long list of unauthorized driveway culvert extensions and other drainage alterations that impede flow and the city's ability to maintain the drainage system, thus contributing to flooding in the area. Phase 2 consisted of correcting, removing, and replacing approximately 26 unauthorized culvert extensions on Boyd Street, Fenton Street and Pembina Street.

Staff initially proposed a Queensborough public education/information session to be held in 2020 to inform the broader community of the drainage barriers, their adverse impacts to proper drainage and the need for their removal. However, this public information session was postponed due to the COVID-19 pandemic. A new outreach strategy is being planned for early 2022 in consultation with the Manager of Public Engagement.

In 2020, staff did proceed to direct three properties on Boyd Street to remove unauthorized culverts that were impeding drainage. Letters were sent to the owners in question and most of the property owners fully complied and removed the unauthorized works. The removal of these 3 drainage impediments significantly decreased flooding and resulted in no drainage complaints from this area during the 2020-2021 wet weather season.

In continuation of the Phase 2 program to address the remaining problematic culvert/retaining wall additions on Fenton Street, staff proposed to remove drainage barriers in a downstream to upstream progression in 2021. Eight more locations with problematic culvert extensions have been identified (7 on Fenton Street and 1 on Pembina/Boyd Street). Notifications have been sent out to affected property owners that the unauthorized works need to be removed at their expense. Once removed, the City will inspect the condition of the main driveway culvert and if necessary, replace it at the City's cost.

Meetings have been held in 2019 and 2020 between residents of Fenton Street and city representatives to discuss the multi-phase drainage improvement program. Staff recommends that a follow-up meeting with residents of Fenton Street be scheduled, including translation and interpretation services if necessary, to provide a progress update and to explain options such as a Local Area Service Program to improve drainage and streetscape on Fenton Street under a cost sharing partnership.

Next Steps

Engineering staff will continue to liaise and respond to local residents regarding drainage issues as they arise. The following is a list of planned actions.

- Complete remaining channel works on Boyd St. and Wood St (anticipate completion in mid-2022);
- Pursue drainage barrier removals at 8 properties on Fenton St and Pembina St (underway);
- Continue ditch monitoring & maintenance in specific areas (ongoing);
- Continue enforcement of any new unauthorized culvert extension/barrier (ongoing);
- Progressive ditch enclosure at time of building permit & new development (ongoing);
- Schedule a follow-up meeting in January 2022 with residents of the Queensborough historic area to review recent drainage works and flooding issues – subject to the availability of residents group;

- Develop a communication/education outreach plan to inform Queensborough residents of the important drainage function of driveway culverts and city ditches and the opportunity for residents-driven Local Area Service program for street improvements.

FINANCIAL IMPLICATIONS

The total cost of Phase 1 improvements was approximately \$8 million. This work consisted primarily of downstream collector drainage works funded through the sewer capital program. The Phase 2 removal of unauthorized culvert extensions and retaining walls is the responsibility of the property owner. Should the original culvert need replacement, the City would be responsible for the replacement cost (estimated to be approximately \$12,000 per culvert) which will be funded from the Drainage capital budget.

INTERDEPARTMENTAL LIAISON

Engineering Operations has worked closely with the Infrastructure Planning Division in Engineering to develop and implement the drainage improvement plan.

OPTIONS

The following options are presented for Council's consideration:

1. Receive this report for information;
2. Provide other directions to staff.

Staff recommends Option 1.

CONCLUSION

The City invested considerable effort and capital funds to improve the localized flooding situation in the Queensborough Historic Area. Three unauthorized local drainage impediments were removed by property owners in 2020. The next step is the continual removal of localized drainage barriers such as unauthorized culvert and retaining wall additions in a downstream to upstream progression, and to provide an update to the community and a summary of options available to them to further improve drainage.

ATTACHMENTS

Attachment 1 - Council Report Titled "Implementation of Ditch Infill and Urban Streetscape in Queensborough" Dated September 14, 2015

Attachment 2 - Council Report Titled "Ditch Infill and Urban Streetscape in Queensborough Strategies and Community Feedback" Dated March 7, 2016

Attachment 3 - Process for Frontage Ditch Enclosure with a Engineered Storm System
<https://www.newwestcity.ca/services/water-and-sewers/drainage/articles/7307.php>

APPROVALS

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