



Committee of the Whole Excerpts
April 09, 2024

WINDSOR FLOOD STUDY PHASE 2 EXCERPT

In January of 2024 staff were directed to proceed in an expediated fashion for next steps towards a solution for storm water diversion and management, specifically for the residents along Stannus Street, Victoria St, Gray St, Monroe St, Lower Wiley Avenue, Wagners Crt, portions of Albert Street and Tremaine Crescent.

CBCL was asked to provide a cost proposal to take on the proposed work and submitted a proposal to move forward with the Stormwater solutions.

The work was expected to take between 6 and 8 months. The scope of work will include generating plan and profile drawings that will be used to:

- Identify upstream system connection locations to allow for expansion of the system
- Identify known existing utilities that would be impacted
- Identify if private property will be impacted and the extent
- Generate Class C Estimates

and proposed to be completed in four parts to narrow down options.

The recommended motion was that Committee of the Whole recommend that ...

COUNCIL APPROVES THE PROPOSAL FROM CBCL FOR THE WINDSOR FLOOD STUDY PHASE 2 FOR THE ESTIMATED AMOUNT OF \$240,500 PLUS APPLICABLE TAXES.



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☒	Decision Request ☐	Councillor Activity ☐
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To: Committee of the Whole

Submitted by: _____
Todd Richard

Date: April 9, 2024

Subject: Windsor Flood Water Study Phase 2 - CBCL

LEGISLATIVE AUTHORITY

Nova Scotia Municipal Government Act, Section 65 authorizes Council to expend funds for municipal purposes.

RECOMMENDATION or DECISION REQUEST

Committee of the Whole recommends to Council that:

Council approves the Proposal from CBCL for the Windsor Flood Study Phase 2 for the estimated amount of \$240,500 plus applicable taxes.

BACKGROUND

Property ☐	Public Opinion ☐	Environment ☐	Social ☒	Economic ☐	Councillor Activity ☐
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CBCL prepared the Windsor Stormwater Report and presented it to Council in December 2023. This report identified a series of optional approaches to stormwater management for the purpose of reducing flood risk in the specific areas of Windsor that have been prone to flooding. This report and the associated studies fully explored the analytics of the stormwater problem and created a thorough understanding to properly define the reasons behind the current issues as were presented in the report. In order to determine the best options to provide short term relief, it is imperative to consider all the effects both short term and long term.

In January of 2024 Council directed staff to proceed in an expediated fashion for next steps towards a solution for storm water diversion and management, specifically for the residents along Stannus Street, Victoria St, Gray St, Monroe St, Lower Wiley Avenue, Wagners Crt, portions of Albert Street and Tremaine Crescent.

CBCL was asked by staff to provide a cost proposal to take on the proposed work based on Council direction.

DISCUSSION

CBCL submitted a proposal to move forward with the Stormwater solutions. They will work with staff to develop a schedule that meets the project objectives while allowing suitable time to complete the work required to provide the Municipality with the answers they are looking for. This work is expected to take between 6 and 8 months.

To date, there has been extensive investigative work by CBCL. They have collected the data, created models and gained knowledge that now has to be transferred into practical, realistic infrastructure solutions. In order to decrease down the stormwater management solution options, it is necessary to move forward with preliminary engineering and design. This is required to identify conflicts, obstacles and risks; basically, to determine the practicality and constructability of each option. The scope of work will include generating plan and profile drawings. The plan profiles will be used to:

- Identify upstream system connection locations to allow for expansion of the system
- Identify known existing utilities that would be impacted
- Identify if private property will be impacted and the extent
- Generate Class C Estimates

The planned work Methodology proposed to narrow down the options includes:

Part A – Review existing data and determine what additional data is required. The data will generally consist of surveying existing infrastructure and pump station information.

Part B – Evaluate the options and identify up to three options that can move forward to Concept Development.

Part C – Develop Shortlist of Options through updated models based on data collection. This stage will include conceptual drawings for viable options and Class C Estimates for actual

construction costs. Drawings will show location of proposed infrastructure, infrastructure to be relocated, impacted private property and other key information.

Part D – Predesign Report to fully detail and explain the options with a review meeting to discuss the findings. A follow-up presentation will be made to Council.

CBCL proposes to do the work for the estimated fee of \$240,500.00, this is based on the scope described and the fee could increase or decrease depending on the outcomes of the Option Evaluation and Shortlisted Option Development tasks.

NEXT STEPS

Pending approval of Council; staff will direct CBCL to commence Phase 2 of the Windsor Stormwater Study.

FINANCIAL IMPLICATIONS

The total cost for Windsor Flood Study Phase 2 is \$250,817.45. Pending Council decision, the amount will be captured in 2024-25 Capital Budget, proposed to be funded through Municipal Finance Division.

ALTERNATIVES

1. Council may choose to not proceed with the phase 2 study.
2. Council may choose to direct staff to issue a RFP on the procurement site to solicit other proposals for this scope of work.
3. Council may choose to direct staff to issue an expression of interest or request for proposals on other potential short-term options or solutions not put forth by CBCL.

ATTACHMENTS

CBCL Storm Water Study Phase 2 proposal.

CHIEF ADMINISTRATIVE OFFICER REVIEW

The report hits the highlights of past discussions and direction from Council as well as the scope of work. To comply with procurement requirements the approval of this work and its costs estimates have been returned to Council for approval.

Staff await direction from Council. I support the recommendation to ensure the solutions sought for the impacted areas continue to be supported so that future projects can be brought forward to Council for consideration.

Report Prepared by:



Erin Amirault P.Eng. Project Engineer

Report Reviewed by:

Todd Richard, Director of Public Works

Report Approved by:



Mark Phillips, Chief Administrative Officer

March 21, 2024

Todd Richard
Director of Public Works
West Hants Regional Municipality
100 King Street
PO Box 3000
Windsor, NS B0N 2T0

Mr. Richard:

RE: Windsor Flood Study Phase 2

The areas of Stannus Street, Victoria St, Gray St, Monroe St, Lower Wiley Avenue, Wagners Crt, and portions of Albert St and Tremaine Crescent in Windsor are known to flood. Options to reduce flooding have been presented in the Windsor Stormwater Report (WSR) prepared by CBCL Limited (CBCL). This report identified a series of optional approaches to stormwater management for the purpose of reducing flood risk in areas of Windsor that have been prone to flooding historically. Additional analysis and engineering are required to determine which options are feasible, provide the greatest reduction in flood risk, and provide the highest cost benefit.

CBCL was asked by WHRM to look at methods that will immediately divert stormwater away from the noted areas to prevent short term flooding. Council requested that staff meet CBCL Limited to determine a specific scope of work to expand upon the initial work done to date that can provide short term relief and be expandable to remaining parts of Windsor.

Objective

The objective of this work is to confirm the initial modeling results and to conduct preliminary engineering to identify conflicts, obstacles and risks associated with the options under consideration. The scope will include generating plan and profiles drawings for the initial phase of the options being considered. The plan profiles will be used to:

- Identify upstream system connection location to allow for expansion of the system.
- Identify known existing utilities that would be impacted,
- identify if private property will be impacted, and
- Generate a Class C estimates

An initial screening of the options will be implemented to short list the options to 3 viable options. The screening will be based on several parameters such as time to implementation, permitting, costs, will impacts be local or impact the entire community, etc. We can review these and develop/expand on this list. It should be noted that this scope will not immediately divert water from the noted areas. Subsequent design and construction of specific measures will need to take place before improvements are achieved.

Options Being Considered

The WSR identified numerous options for further investigation and will form the basis of more detailed work. The option numbers below correspond to the WSR.

Full Separation - Option 3

The stormwater flow would be split between Albert Street and Cunnabel Creek. This option would evaluate installing a new sanitary sewer and storm sewer in Cunnabel Creek. This will require flow control at the connection points of the existing combined sewer into the new sanitary sewer that will allow combined sewer flows over a specified limit to discharge to the new storm sewer. The storm sewer will be discharged directly into the river and therefore there may be an increase in combined sewer overflows. This will need to be quantified, along with a time frame for additional separation, if this is the selected option, prior to NSE providing approval.

Cunnabel Creek Option 3A

This option looks at separating Stannus Street so it is no longer connected to the Cunnabel Creek combined sewer. Under this option a new sewer will be connected to the existing sewer interceptor and a new stormwater outfall would be constructed. We will look at sizing the new stormsewer to service Stannus Street and the local streets that currently discharge into it, not the entire watershed. A variation of this option would be to install a combined sewer pump to pump flows from Cunnabel Creek combined sewer into the new sewer, which would need to be upsized to accommodate this additional flow. This would allow the sewer to be installed at typical depths instead of the very deep depth required to get gravity flows from this area. The pumping option would likely require considerable upgrades to the downstream existing infrastructure to accommodate the additional flows.

Cunnabel Creek Option 3B

This option looks at diverting flows from Cunnabel Creek to Albert Street and Stannus Street. This option allows Cunnabel Creek to remain in service by reallocating the excess flows to other parts of the system with more capacity. This would result in a new system similar to

Option 3A to be installed on Stannus Street that would be expandable to allow separation to continue upstream of Stannus Street.

Cunnabel Creek Option 4A – Installation of a Stormwater Pump on Stannus Street

This option will look at preliminary sizing of a pump station to pump combined sewer from the existing Cunnabel Creek/Stannus Street combined sewer systems. The existing combined sewer would remain in service and this would provide additional capacity to the system. We will generate design parameters for the station and forcemain along with a concept plan identifying potential location of PS, modifications of combined sewer to connect to the pump station, and proposed routing for the forcemain to the existing newer treatment plant. We will review the capacity of the treatment plant to receive the additional flows.

Cunnabel Creek Option 4B – Installation of a Stormwater Tunnel to the STP

This option is the same as Option 4A but instead of pumping the combined sewer to the STP a new tunnel would be installed to connect this area to the 3 Lagoon Drive pump station that pumps into the treatment plant. The existing LS4 at the Lagoon Drive STP will need to be upgraded. Scope will include looking at an expansion to this pumping station to allow combined sewer to be directed to the new wastewater facility on Wentworth Rd and 3 Lagoon Drive STP or a flow variation directed to either plant as required. This would also need to include a force-main to be installed from 3 Lagoon Drive to the new WWTF on Wentworth Road

Storage

This option was explored at a high level in the initial Stormwater Report, this option will be investigated to see if storage could be implemented to offset the current capacity issues. Storage may be one large system or small storage systems throughout the system that could be installed in phases.

Methodology

Tasks for completing the work are outlined below.

Part A - Data Gap Analysis and Field Data Collection

We will work with WHRM to review existing data and determine what additional data is required. The data will generally consist of surveying existing infrastructure and pump station information.

Survey

Collect additional field information such as sewer inverts, road elevations, water courses, etc., to allow us to put together an existing condition drawing of the area. Watermain information from the GIS system will be incorporated into the existing conditions drawings. All underground piping will be reviewed and verified with WHRM staff.

Pump Stations

Pump stations control the amount of flow being pumped out of the system and additional information on how the system are performing would assist in further refining the model. Therefore, the pumping rate is important to understand when assessing the systems ability to move water to the next sewershed. In the previous work we completed drawdown tests on the pump station within the downtown core to assist in estimating wastewater use. We propose to conduct drawdown tests on the remaining pump stations to allow for more refined modeling to be completed.

Flow Monitoring

The previous flow monitoring program did not capture any significant wet weather events. This information is required to refine the model calibration to accurately support the concept design development and hydraulic assessment (i.e. pipe sizing, overflow analysis, and flow estimates). The flow metering work is currently being completed under a separate scope of work. This scope of work includes the model calibration to wet weather collected during the 2024 flow metering program. The updated model will be used to support the Phase 2 assessment.

Part B - Options Evaluation

Under this task we will develop general arrangement drawings of the options being considered that show location and routing of infrastructure, possible property impacts, connection points to existing system, and existing infrastructure conflicts. This information will be discussed with staff through a technical workshop. The objective of the workshop will be to identify options that can be implemented quickly, have the shortest approval windows, and can provide improved stormwater management in the impacted areas within or before the 2025/26 construction season. The objective will be to identify up to 3 options that can move forward to Concept Development. Modelling will not be completed at this stage, it will be completed to refine the shortlisted options.

Part C - Shortlisted Option Development

Under this option we will use our updated model to confirm the performance of the shortlisted options and refine design parameters such as pipe size, flows, discharge locations, connection location, and review down stream infrastructure that may be impacted by diversion of stormwater. If the model shows the option will not provide the level of service required, this will be noted and the option will no longer be consider a viable option. We will develop conceptual drawings of the shortlisted options that show benefits. The drawings will show the location of proposed infrastructure, infrastructure that will need to be relocated, impacted private property, and other key information. Class C opinion of probable construction costs will be developed for these options.

Part D - PreDesign Report

A design memo will be prepared that describes all options considered, the rational for the three (3) selected to move to the Concept Development phase, a description of the design parameters for the three (3) selected options, and Class C opinion of probable capital cost. This memo will be issued for review and consideration with a review meeting to discuss the findings. A finalized version of the memo will be released, and a follow up presentation will be made to council.

Project Team

Aaron Baillie will be the main point of contact and project manager; his contact information is as follows:

Aaron Baillie

Direct: 902-492-6750

Email: aaronb@cbcl.ca

Registry of Joint Stocks: 1116242 | HST No.10884 9066

The key project team members are identified below with short bios describing their work experience; detailed resumes are attached.

Aaron Baillie, P.Eng. – Project Manager



Aaron is the Municipal Department Head in CBCL's Halifax office. He has degrees in Environmental Engineering (P.Eng.) and Agricultural Mechanization (B.Sc.) with more than twenty-four years of experience in the design development, project management, detail design, procurement, construction, and cost estimating of municipal infrastructure projects. Aaron has been involved in all aspects of project delivery including planning, detail design, assessments, project management, construction administration, and commissioning.

Archie Thibault, PQS – Cost Estimating



Archie is a registered Professional Quantity Surveyor with the Canadian Institute of Quantity Surveyors who has over 39 years of experience in construction estimating, pre-construction management, and subcontractor procurement. His previous 26 years career as the Chief and Senior estimator with an industry leading Canadian General Contractor / Construction Manager; he successfully tendered over 200 projects covering most construction categories, and contract formats.

This experience provides CBCL, with a unique blend of experience and expertise from both sides of a construction contract. Since joining CBCL in 2006 he has provided Quantity Surveying cost consulting services for a wide range of projects. Specifically, he has carried out capital cost estimating for bridges, underpasses, roundabouts, highways, and industrial park road developments thru out Atlantic Canada.

Schedule and Fee

We will work with staff to develop a schedule that meets the project objectives while allowing suitable time to complete the work required to provide the Municipality with the answers they are looking for. The overall project timeline is expected to take between 6 and 8 months.

Fee

Our proposed lump sum fee is presented below, our standard terms and conditions are attached. This is a fee estimated based on the scope of described in this letter, this fee could decrease or increase depending on the outcomes of the Option Evaluation and Shortlisted Option Development tasks. If you accept our fee and agree to the terms and conditions attached, please provide us written notification to proceed with the work.

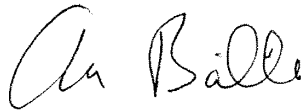
Fee:

Project Management	\$ 17,000
Data Gap and Field Work	\$ 15,500
Option Evaluation	\$ 75,000
Shortlisted Option Development	\$133,000
Total	\$240,500

Todd Richard
March 21, 2024

Yours very truly,

CBCL Limited



Prepared by:
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Reviewed by:
Andrew Gates, P.Eng.
VP Infrastructure Services

Attachments: CBCL Limited Standard Terms and Conditions

Proposal No: 248405.15

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